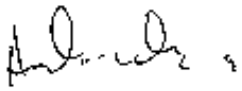
TEST REPORT
FROM
RADIO FREQUENCY
INVESTIGATION LTD.

Test Of: Mansella Ltd.
CDP Handset

To: FCC Part 15 Subpart C: 2001
(Intentional Radiators)
Section 15.247

Test Report Serial No:
RFI/MPTB1/RP44309JD04A

This Test Report Is Issued Under The Authority Of Richard Jacklin, Operations Director: 	**Checked By:**  **pp**
Tested By: 	**Release Version No:** **PDF01**
Issue Date: 17 February 2003	**Test Dates: 09 December 2002 to 18 December 2002**

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The results in this report apply only to the sample(s) tested.

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1. Client Information

Company Name:	Mansella Limited
Address:	Stafford House 33 - 39 Station Road Aldershot Hants G11 1BA
Contact Name:	Mr Wahed Dewan

2. Equipment Under Test (EUT)

The following information (with the exception of the Date of Receipt) has been supplied by the client:

2.1. Identification Of Equipment Under Test (EUT)

Brand Name:	Olympia
Model Name or Number:	CDP-24 201 (Handset)
Unique Type Identification:	CDP-24
Serial Number:	None stated by client
Country of Manufacture:	China
Date of Receipt:	09 December 2002

2.2. Description Of EUT

The equipment under test is a cordless data phone (CDP) handset for a domestic cordless telephone. The CDP is a combined wireless voice and data product using the high power Bluetooth V1.1 wireless standard for worldwide operation.

2.3. Modifications Incorporated In EUT

The EUT has not been modified from what is described by the Model Number and Unique Type Identification stated above.

2.4. Additional Information Related To Testing

Power Supply Requirement: (non-removable lithium ion battery)	3 x 1.2V AAA NiMH Cells
Intended Operating Environment:	Domestic Use
Equipment Category:	Mobile
Type of Unit:	Cordless Telephone
Weight:	140 g
Dimensions:	130 x 53 x 25 mm
Interface Ports:	Mini B USB Port
Highest Declared Generated Frequency within the EUT.	2.480 GHz
Transmit Frequency Range Tested	2.402 GHz to 2.480 GHz
Receive Frequency Range Tested	2.402 GHz to 2.480 GHz
Maximum Measured Output Power (EIRP)	27.0 mW

2.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	BT RF Tester
Brand Name:	Agilent
Model Name or Number:	E1852A
Serial Number:	DK41300172
Cable Length And Type:	Not Applicable
Connected to Port:	50 Ω Antenna / 50 Ω SMA connector on the conducted EUT antenna port

Description:	Laptop PC
Brand Name:	Dell
Model Name or Number:	Lattitude
Serial Number:	TW09C748-128-157-3888
Cable Length And Type:	Not Applicable
Connected to Port:	USB port on the EUT

Description:	3 m Parallel Printer Lead
Brand Name:	Roline
Model Name or Number:	Roline
Serial Number:	None stated by client
Cable Length And Type:	3 m Parallel
Connected to Port:	Connected to PC parallel port

3. Test Specification, Methods And Procedures

3.1. Test Specification

Reference:	FCC Part 15 Subpart C: 2001 (Section 15.247)
Title:	Code of Federal Regulations, Part 15 (47CFR15) Radio Frequency Devices: Digital Devices.
Comments:	A description of the test facility used for this test is on file with, and has been accepted by, the Federal Communications Commission as required by Section 2.948 of Federal Rules.
Purpose of Test:	To determine whether the equipment complied with the requirements of the specification for the purposes of certification.

Reference:	FCC Part 15 Subpart B: 2001 (Section 15.107 and 15.109)
Title:	Code of Federal Regulations, Part 15 (47CFR15) Radio Frequency Devices: Radio Frequency Devices.
Comments:	A description of the test facility used for this test is on file with, and has been accepted by, the Federal Communications Commission as required by Section 2.948 of Federal Rules.
Purpose of Test:	To determine whether the equipment complied with the requirements of the specification for the purposes of certification.

3.2. Methods And Procedures

The methods and procedures used were as detailed in:

FCC Code of Federal Regulations 47.
Telecommunication. Parts 0 to 19, October 2001.

ANSI C63.2 (1987)
Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (2001)
Title: American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1988)
Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)
Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1: (1999)
Title: Specification For Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1: Radio Disturbance and Immunity Measuring Apparatus.

3.3. Definition Of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the Methods & Procedures section above. Appendix 1 contains a list of the test equipment used.

4. Deviations From The Test Specification

None.

5. Operation Of The EUT During Testing

5.1. Operating Conditions

The EUT was tested in a normal laboratory environment.

During testing, the EUT was powered by an internal battery supply of 3 x 1.2V AAA NiMH cells.

5.2. Operating Modes

The EUT was tested in the following operating modes:

As a Bluetooth cordless telephone handset.

The reason for choosing these modes was that the client defined it as being likely to be the worst case with regards EMC.

5.3. Configuration And Peripherals

The EUT was tested in the following configuration:

Please refer to Appendix 3 for configuration diagram.

A link was established and channels selected using the Bluetooth test set.

6. Summary Of Test Results

Range Of Measurements	Specification Reference	Port Type	Compliancy Status
Conducted Emissions (AC Mains)	C.F.R. 47 FCC Part 15: 2001 Section 15.107 Section 15.207	AC Mains	Complied
Receiver Radiated Emissions	C.F.R. 47 FCC Part 15: 2001 Section 15.109	Antenna	Complied
Transmitter Carrier Frequency Separation	C.F.R. 47 FCC Part 15: 2001 Section 15.247(a)(1)	Antenna Terminals	Complied
Transmitter 20dB Bandwidth	C.F.R. 47 FCC Part 15: 2001 Section 15.247(a)(1)	Antenna Terminals	Complied
Transmitter Average Time of Occupancy	C.F.R. 47 FCC Part 15: 2001 Section 15.247(a)(1)(ii)	Antenna Terminals	Complied
Transmitter Maximum Peak Output Power	C.F.R. 47 FCC Part 15: 2001 Section 15.247(b)(1)	Antenna Terminals	Complied
Transmitter Conducted Emissions	C.F.R. 47 FCC Part 15: 2001 Section 15.247 (c)	Antenna Terminals	Complied
Transmitter Radiated Emissions	C.F.R. 47 FCC Part 15: 2001 Section 15.247(c) Section 15.209(a)	Antenna	Complied
Transmitter Band Edge Conducted Emissions	C.F.R. 47 FCC Part 15: 2001 Section 15.247(c)	Antenna Terminals	Complied
Transmitter Band Edge Radiated Emission	C.F.R. 47 FCC Part 15: 2001 Section 15.247(c) Section 15.209(a)	Antenna	Complied

6.1. Location Of Tests

All the measurements described in this report were performed at the premises of Radio Frequency Investigation Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ, England.

7. Measurements, Examinations And Derived Results

7.1. General Comments

7.1.1. This section contains test results only. Details of the test methods and procedures can be found in Appendix 2 of this report.

7.1.2. Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to Section 8 for details of measurement uncertainties.

7.2. Conducted Emissions: AC Mains - Section 15.107 & 15.207

7.2.1. Quasi-Peak Detector Measurements On Live And Neutral Lines

7.2.1.1. Preliminary AC conducted spurious scans were performed with the EUT set to Top, Middle and Bottom channels and in Receive mode as required by FCC Part 15.31(m).

7.2.1.2. Final measurements were performed on the worst-case configuration as described in Part 15.31(i).

7.2.1.3. A Plot of the worst-case scan can be found in Appendix 4.

7.2.1.4. The following tables lists frequencies at which emissions were measured using a Quasi-Peak and Average detector:

Quasi-Peak Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Q-P Level (dBμV)	Q-P Limit (dBμV)	Margin (dB)	Result
0.16361	Live	36.49	65.28	28.79	Complied
0.23887	Neutral	32.81	62.14	29.33	Complied
0.31620	Neutral	29.33	59.81	30.48	Complied
3.03837	Neutral	14.22	56.00	41.78	Complied
6.02665	Neutral	13.72	60.00	46.28	Complied
11.25047	Live	13.67	60.00	46.33	Complied
21.18505	Neutral	13.74	60.00	46.26	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Q-P Level (dBμV)	Q-P Limit (dBμV)	Margin (dB)	Result
0.16361	Live	14.02	55.28	41.26	Complied
0.23887	Neutral	11.71	52.14	40.43	Complied
0.31620	Neutral	10.85	49.81	38.96	Complied
3.03837	Neutral	8.41	46.00	37.59	Complied
6.02665	Neutral	8.05	50.00	41.95	Complied
11.25047	Neutral	8.05	50.00	41.95	Complied
21.18505	Neutral	8.10	50.00	41.90	Complied

7.3. Receiver Radiated Emissions: Section 15.109

7.3.1. Electric Field Strength Measurements (Frequency Range: 30 to 1000 MHz)

7.3.1.1. Preliminary radiated spurious scans were performed with the EUT set to Receive Mode, as stated in section 5.2. Final measurements were made on any emissions that were within 20 dB of the limit.

7.3.1.2. Plots of the initial scans can be found in Appendix 4.

7.3.1.3. The following table lists the frequencies at which emissions were measured using a Quasi-Peak detector at a distance of 3 m. The results incorporate antenna factors and cable losses and are compared to the limits specified in FCC Part 15.109.

Frequency (MHz)	Ant. Pol.	Q-P Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
180.001	Vert.	31.5	43.5	12.0	Complied
260.580	Horiz.	19.0	46.0	27.0	Complied
270.597	Vert.	30.0	46.0	16.0	Complied

7.4. Receiver Radiated Emissions: Section 15.109

7.4.1. Electric Field Strength Measurements (Frequency Range: 1.0 to 12.5 GHz)

7.4.1.1. Tests are required up to five times the highest used frequency and therefore were performed up to 12.5 GHz.

7.4.1.2. Preliminary radiated spurious scans were performed with final measurements being taken for any emission within 20 dB of the limit.

7.4.1.3. Plots of all the initial scans can be found in Appendix 4.

7.4.1.4. All emissions were less than 20 dB below the limit as such no results were recorded. Please refer to Appendix 4, Graphs: GPH\44309JD05\005, GPH\44309JD05\008, GPH\44309\RE004, GPH\44309\RE005 and GPH\44309\RE006.

7.5. Transmitter Carrier Frequency Separation: Section 15.247(a)(1)

7.5.1. Tests were performed to identify the carrier frequency separation as per FCC Part 15.247(a)(1).

7.5.2. Section 15.247 (a)(1) specifies that the channels should be separated by at least 25 kHz or the 20 dB bandwidth of the channel.

7.5.3. The following table shows the measured Carrier Frequency Separation with reference to a graphical plot in Appendix 4 of this report:

Result:

Transmitter Carrier Frequency Separation (MHz)	Graph
0.995	GPH\44309\CFS01

7.6.Transmitter 20dB Bandwidth: Section 15.247(a)(1)

7.6.1. Tests were performed to identify the 20 dB bandwidth as per FCC Part 15.247(a)(1).

7.6.2. The following table shows the measured 20 dB bandwidth with reference to a graphical plot in Appendix 4 of this report:

Result:

Transmitter 20dB Bandwidth (MHz)	Graph
0.966	GPH\44309JD04\20DBBW01 & GPH\44309JD04\20DBBW02

7.7.Transmitter Average Time of Occupancy: Section 15.247(a)(1)(ii)

7.7.1. Tests were performed to identify the average time occupancy as per FCC Part 15.247(a)(1)(ii).

7.7.2. Section 15.247 (a)(1)(ii) specifies that the average time occupancy shall not be greater than 0.4 seconds.

7.7.3. The time occupancy of the system was tested on a single carrier frequency. The maximum packet length was measured and multiplied by the number of transmissions within a 30 second period. The result was noted as being the average time of occupancy and can be seen in the following table with references the a graphical plot in Appendix 4 of this report:

Result:

Packet Length (μs)	Number of Transmissions in 30 Seconds	Average Time of Occupancy (s)	Graph
468	135	0.063	GPH\44309\NOT001 & GPH\44309\T0001

7.8. Transmitter Peak Output Power: Section 15.247(b)(1)

7.8.1. Tests were performed to identify the maximum transmit power in accordance with FCC Part 15.247(b)(1).

7.8.2. The client has provided a temporary antenna port to allow a direct connection to be made.

7.8.3. The client has specified that the EUT employs frequency hopping with 79 hopping channels. Therefore the maximum transmitter power level under FCC Part 15.247(b)(1) is 1 Watt.

7.8.4. Results are shown for the EUT set to Top, Middle and Bottom channels as stated in FCC Part 15.31 (m) and section 5.2 of this report. Graphical measurements are shown for the transmit power levels within Appendix 4.

7.8.5. Measurements were performed on the Top, Middle and Bottom channels for the specified extremes of input voltages:

Results:

Please refer to Graph GPH\44309\CPBOT01 & GPH\44309\CPBOT06 in Appendix 4.

Number of Hopping Channels Employed	Graph
79	GPH\44309\NOHF01

Channel	Input Voltage (DC)	Output Power (mW)	Antenna Gain (dBi)	EIRP (mW)	Limit (Watts)	Margin (mW)	Result
Bottom	3.25	31.3	-1.74	20.9	1.0	979.1	Complied
Bottom	4.20	39.2	-1.74	26.3	1.0	973.7	Complied
Middle	3.25	32.3	-1.74	21.7	1.0	978.3	Complied
Middle	4.20	40.3	-1.74	27.0	1.0	973.0	Complied
Top	3.25	30.0	-1.74	20.1	1.0	979.9	Complied
Top	4.20	36.7	-1.74	24.6	1.0	975.4	Complied

7.9. Transmitter Conducted Emissions: Section 15.247(c)

7.9.1. Spurious emissions tests on the antenna port were performed in accordance with FCC Part 15.247(c).

7.9.2. Section 15.247(c) specifies that all spurious emissions measured within a 100 kHz bandwidth shall be attenuated by at least 20 dB below the level of the highest fundamental level measured in a 100 kHz bandwidth.

7.9.3. Conducted spurious emission scans were performed between 9 kHz and 10 times the highest generated frequency with the EUT operating at the Top, Middle, Bottom channels as specified within clause 15.31(m). All channels were active and transmitting data.

7.9.4. Plots of the initial scans can be found in Appendix 4.

Results:

Highest Peak Level: Bottom

Frequency (GHz)	Peak level (dBm)	Peak Limit (dBm)	Peak Margin (dB)	Result
4.804	-32.7	-3.3	29.4	Complied

Highest Peak Level: Middle

Frequency (GHz)	Peak level (dBm)	Peak Limit (dBm)	Peak Margin (dB)	Result
4.882	-35.3	-2.8	32.5	Complied

Highest Peak Level: Top

Frequency (GHz)	Peak level (dBm)	Peak Limit (dBm)	Peak Margin (dB)	Result
4.959	-38.0	-3.5	34.5	Complied

7.10. Transmitter Radiated Emissions: Section 15.247(c) and 15.209(a)

7.10.1. Electric Field Strength Measurements: 30 to 1000 MHz.

7.10.1.1. The following table specifies frequencies, which fall close to the restricted bands as specified in section 15.205(a).

7.10.1.2. The client has stated that the highest clock frequency for the EUT was 2.480 GHz. Therefore measurements were performed up to 26.5 GHz.

7.10.1.3. Preliminary Radiated spurious scans were performed with the EUT set to Top, Middle and Bottom channels and with all channels active (transmitting data on pseudo random hopping channels) as stated in section 5.2.

7.10.1.4. Due to dynamic range limitations of the measuring receiver, scans at high frequencies above 12.5 GHz were performed at a 1 m measurement distance. The measured value was then corrected by 9.5 dB using the formula 20log(D1/D2) Where D1 was 3 m and D2 was 1 m.

7.10.1.5. Plots of the initial scans can be found in Appendix 4.

7.10.1.6. The following table lists frequencies at which emissions were measured using a Quasi-Peak detector at a test distance of 3 m (results incorporate antenna factors and cable losses):

7.10.1.7. The following results are for the EUT configured with an internal antenna connected and operating.

Bottom Channel

Frequency (MHz)	Ant. Pol.	Q-P Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
180.001	Vert.	41.5	43.5	2.0	Complied

Middle Channel

Frequency (MHz)	Ant. Pol.	Q-P Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
180.001	Vert.	41.5	43.5	2.0	Complied

Top Channel

Frequency (MHz)	Ant. Pol.	Q-P Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
180.001	Vert.	41.5	43.5	2.0	Complied

Transmitter Radiated Emissions: Section 15.247(c) and 15.209(a) (continued)

7.10.2. Electric Field Strength Measurements: 1.0 to 26.5 GHz

Highest Average Level: Bottom Channel

Frequency (GHz)	Antenna Polarity (H/V)	Average Detector level (dBμV)	Antenna factor (dB)	Cable loss (dB)	Actual Average Level (dBμV/m)	Average Limit (dBμV/m)	Average Margin (dB)	Result
4.804	Vert.	17.2	24.2	1.5	42.9	54.0	11.1	Complied
7.209	Vert.	12.2	26.8	2.2	41.2	54.0	12.8	Complied

Highest Peak Level: Bottom Channel

Frequency (GHz)	Antenna Polarity (H/V)	Peak Detector level (dBμV)	Antenna factor (dB)	Cable loss (dB)	Actual Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Peak Margin (dB)	Result
4.804	Vert.	31.6	24.2	1.5	57.3	74.0	16.7	Complied
7.209	Vert.	29.1	26.8	2.2	58.1	74.0	15.9	Complied

Transmitter Radiated Emissions: Section 15.247(c) and 15.209(a) (continued)

7.10.3. Electric Field Strength Measurements: 1.0 to 26.5 GHz

Highest Average Level: Middle Channel

Frequency (GHz)	Antenna Polarity (H/V)	Average Detector level (dBμV)	Antenna factor (dB)	Cable loss (dB)	Actual Average Level (dBμV/m)	Average Limit (dBμV/m)	Average Margin (dB)	Result
4.871	Vert.	17.1	24.2	1.8	43.1	54.0	10.9	Complied
7.322	Vert.	12.5	26.8	2.2	41.5	54.0	12.5	Complied

Highest Peak Level: Middle Channel

Frequency (GHz)	Antenna Polarity (H/V)	Peak Detector level (dBμV)	Antenna factor (dB)	Cable loss (dB)	Actual Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Peak Margin (dB)	Result
4.871	Vert.	32.2	24.2	1.8	58.2	74.0	15.8	Complied
7.322	Vert.	28.5	26.8	2.2	57.5	74.0	16.5	Complied

Transmitter Radiated Emissions: Section 15.247(c) and 15.209(a) (continued)

7.10.4. Electric Field Strength Measurements: 1.0 to 26.5 GHz

Highest Average Level: Top Channel

Frequency (GHz)	Antenna Polarity (H/V)	Average Detector level (dBμV)	Antenna factor (dB)	Cable loss (dB)	Actual Average Level (dBμV/m)	Average Limit (dBμV/m)	Average Margin (dB)	Result
4.900	Vert.	19.7	24.2	1.8	45.7	54.0	8.3	Complied
7.439	Vert.	12.2	26.8	2.2	41.2	54.0	12.8	Complied

Highest Peak Level: Top Channel

Frequency (GHz)	Antenna Polarity (H/V)	Peak Detector level (dBμV)	Antenna factor (dB)	Cable loss (dB)	Actual Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Peak Margin (dB)	Result
4.900	Vert.	35.4	24.2	1.8	61.4	74.0	12.6	Complied
7.439	Vert.	21.0	26.8	2.2	50.0	74.0	24.0	Complied

7.11. Transmitter Band Edge Conducted Emissions FCC 15.247(c)

7.11.1.The EUT and spectrum analyser were configured as for conducted antenna port measurements, and as per FCC Public Notice DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

7.11.2. Four graphs in total were produced, with the device set to top and bottom channels and hopping. The plots can be seen in Appendix 4 of this report.

Highest Peak Level Lower Band Edge

Frequency (MHz)	Peak Detector level (dBm)	Peak Limit (dBm)	Peak Margin (dB)	Result
2399.749	-42.3	-3.4	38.9	Complied

Highest Peak Level Upper Band Edge

Frequency (MHz)	Peak Detector level (dBm)	Peak Limit (dBm)	Peak Margin (dB)	Result
2484.231	-46.4	-3.4	43.0	Complied

7.12. Transmitter Band Edge Radiated Emissions

7.12.1. Electric Field Strength Measurements

7.12.1.1. The EUT and spectrum analyser were configured for radiated measurements as per FCC Public Notice DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

7.12.1.2. Six graphs in total were produced, with the device set to top and bottom channels, and hopping. The plots can be seen in Appendix 4 of this report.

Average Level

Frequency (MHz)	Average Detector level (dBμV)	Antenna factor (dB)	Cable loss (dB)	Actual Average Level (dBμV/m)	Average Limit (dBμV/m)	Average Margin (dB)	Result
2399.128	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2484.151	15.7	20.6	1.2	37.5	54.0	16.5	Complied (Note 2)

Peak Level

Frequency (MHz)	Peak Detector level (dBμV)	Antenna factor (dB)	Cable loss (dB)	Actual Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Peak Margin (dB)	Result
2399.128	30.8	20.6	1.2	52.6	86.8	34.2	Complied (Note 1)
2484.151	31.9	20.6	1.2	53.7	74.0	20.3	Complied (Note 2)

Note 1:- These results where obtained using the method set out in 15.247(c).

Note 2:- The upper band edge is adjacent to a restricted band as listed in 15.205 as such the results where obtained using the Marker delta method as specified in FCC Public notice DA 00-705,Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

8. Measurement Uncertainty

8.1. No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

8.2. The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

8.3. The uncertainty of the result may need to be taken into account when interpreting the measurement results.

8.4. The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor, such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
Conducted Emissions AC Mains	0.15 MHz to 30 MHz	95%	+/- 3.25 dB
Time Occupancy	Not applicable	95%	+/- 10 %
Channel Separation	Not applicable	95%	+/- 10 %
Occupied Bandwidth	Not applicable	95%	+/- 0.12 %
Effective Isotropic Radiated Power	1.0 GHz to 26.5 GHz	95%	+/- 1.78 dB
Radiated Emissions at 3.0 m	30 MHz to 1000 MHz	95%	+/- 5.26 dB
Conducted Emissions Antenna Port	0.009 kHz to 26.5 GHz	95%	+/- 1.2 dB
Radiated Emissions at 3.0 m	1 GHz to 26.5 GHz	95%	+/- 1.78 dB

8.5. The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the appropriate accreditation body is followed.

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.
A017	3121 Dipole Set	EMCO	3121	0233
A027	Horn Antenna	Eaton	9188-2	301
A031	2 to 4 GHz Eaton Horn Antenna	Eaton	91889-2	557
A059	3146 Log Periodic Antenna	EMCO	3146	8902-2378
A072	Adjustable Dipole Antenna Set	EMCO	3121C	9004-552
A091	EMCO 3110 Biconical Antenna	EMCO	3110	9008-1182
A1069	ESH3-Z5	Rohde & Schwarz	ESH3-Z5	837469/012
A145	10 dB Attenuator	Narda	NONE	NONE
A201	WG 20 Horn Antenna	Flann Microwave Ltd	20240-20	266
A244	20 dB Attenuator	Schaffner	6820-17-B	None
A253	WG 12 Microwave Horn	Flann Microwave	12240-20	128
A254	WG 14 Microwave Horn	Flann Microwave	14240-20	139
A255	WG 16 Microwave Horn	Flann Microwave	16240-20	519
A256	WG 18 Microwave Horn	Flann Microwave	18240-20	400
A259	Bilog Antenna	Chase	CBL6111	1513
A392	3 dB attenuator (9)	Suhner	6803.17.B	None
A429	WG 16 horn	Flann	16240-20	561
A436	WG 20 horn	Flann	20240-20	330
A438	WG 18 horn	Narda	439	8508
A451	Log Spiral Antenna	EMCO	3101	3751
A458	HP RF Limiter	Hewlett Packard	11867A	04421
A559	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	357881052
C341	Cable	Andrews	None	None
C362	Cable	Rosenberger	UFA210A-1-1181-70x70	1925
C364	BNC Cable	Rosenberger	RG142	None
C453	Cable	Rosenberger	RG142XX-001-RFIB	C453-10081998
C468	N-Type Coaxial Cable	Rosenberger	UFA210A-1-3937-504504	98L0440

Test Equipment Used (continued)

RFI No.	Instrument	Manufacturer	Type No.	Serial No.
E005	12x8 Enclosure	KEENE	81R	R3380
G013	SMHU Signal Generator	Rohde & Schwarz	SMHU	894 055/003
L0665	ESIB26 EMI Test Receiver	Rohde & Schwartz	ESIB	100087/026
M003	Spectrum Monitor	Rohde & Schwarz	EZM	883 580/008
M044	ESVP Receiver	Rohde & Schwarz	ESVP	891 845/026
M069	ESMI Spectrum Analyser / Receiver	Rohde & Schwarz	ESMI	829 808/007 (DU) / 827 063/008 (RU)
M090	Receiver / Spectrum Analyser System	Rohde & Schwarz	ESBI	DU:838494/005 RU:836833/001
M127	Spectrum Analyser	Rohde & Schwarz	FSEB 30	842 659/016
M133	Temperature/Humidity/Pressure Meter	RS Components	None	None
M139	Digital Multimeter	Fluke	11	65830028
M209	Thermo/hygro meter	RS Components	RS212-124	M209-RS212-124
S011	D.C. PSU	INSTEK	PR-3010H	9401270
S201	Site 1	RFI	1	
S202	Site 2	RFI	2	

NB In accordance with UKAS requirements, all the measurement equipment is on a calibration schedule.

Appendix 2. Measurement Methods

AC Mains Conducted Emissions

AC mains conducted emissions measurements were performed in accordance with the standard, against appropriate limits for each detector function.

The test was performed in a shielded enclosure with the equipment arranged as detailed in the standard on a wooden bench using the floor of the screened enclosure as the ground reference plane and with the EUT powered via a 60 Hz AC mains supply.

Initial measurements in the form of swept scans covering the entire measurement band were performed in order to identify frequencies on which the EUT was generating interference. In order to minimise the time taken for these swept measurements, a Peak detector was used in conjunction with the appropriate detector IF measuring bandwidths (see table below). Repetitive scans were performed to allow for emissions with low repetition rates, and the duty cycle of the EUT. The test configuration was the same for the initial scans as for the final measurements.

Following the initial scans, a graph was produced giving an overview of the emissions from the EUT plotted against the appropriate specification limit. A tolerance line was set 6 dB below the specification limit and levels above the tolerance line were re-tested (at individual frequencies) using the appropriate detector function.

The test equipment settings for conducted emissions measurements were as follows:

Receiver Function	**Initial Scan**	**Final Measurements**
Detector Type:	Peak	Quasi-Peak (CISPR)*
Mode:	Max Hold	Not applicable
Bandwidth:	9 kHz	9 kHz
Amplitude Range:	60 dB	20 dB
Measurement Time:	Not applicable	> 1 s
Observation Time:	Not applicable	> 15 s
Step Size:	Continuous sweep	Not applicable
Sweep Time:	Coupled	Not applicable

* In some instances an Average detector function may also have been used.

Radiated Field Strength Emissions

Radiated emissions measurements were performed in accordance with the standard, against appropriate limits for each detector function.

Initial measurements covering the entire measurement band in the form of swept scans in a shielded enclosure were performed in order to identify frequencies on which the EUT was generating interference. This determined the frequencies on which the EUT should be re-measured in full on the open area test site. In order to minimise the time taken for the swept measurements, a Peak detector was used in conjunction with the appropriate detector IF measuring bandwidth (see table below). Repetitive scans were performed to allow for emissions with low repetition rates, and for the duty cycle of the EUT. The test configuration was the same for the initial scans as for the final measurements.

The initial scans were performed using an antenna height of 1.5 m and a measurement distance of 3 m. Following the initial scans, graphs were produced giving an overview of the emissions from the EUT plotted against the appropriate specification limit. A tolerance line was set 6 dB below the specification limit and levels above the tolerance line were re-tested on the open area test site, at the appropriate distance, using a measuring receiver with a Quasi-Peak (below 1000 MHz), Average and Peak (above 1000 MHz) detector, where applicable.

For the main (final) measurements the EUT was arranged on a non-conducting table on an open area test site, as detailed in the specification.

All measurements on the open area test site were performed using broadband antennas.

On the open area test site, at each frequency where a signal was found, the levels were maximised by initially rotating the turntable through 360°. For frequencies below 1000 MHz, the antenna was varied in height between 1 m and 4 m. For frequencies above 1000 MHz, the antenna was fixed at a height of 1.5m. At this point, any signals found to be between the limit and a level 6 dB below it were further maximised by changing the configuration of the EUT, e.g. re-routing cables to peripherals and moving peripherals with respect to the EUT.

Once the signal amplitude is determined the EUT is replace with a substitution antenna. A signal generator is connected to the antenna and its level adjusted in order to obtain the same indicated level as that which was observed from the EUT. The receive antenna is then adjusted in height until the signal measured has peaked. The signal generator level is then re-adjusted to regain the original reading. The level on the signal generator – cable losses plus the antenna gain is the recorded ERP.

The test equipment settings for radiated emissions measurements were as follows:

Receiver Function	**Initial Scan Below 1000 MHz**	**Final Measurements Below 1000 MHz**
Detector Type:	Peak	Quasi-Peak (CISPR)
Mode:	Max Hold	Not applicable
Bandwidth:	100 kHz	120 kHz
Amplitude Range:	60 dB	20 dB
Measurement Time:	Not applicable	> 1 s
Observation Time:	Not applicable	> 15 s
Step Size:	Continuous sweep	Not applicable
Sweep Time:	Coupled	Not applicable

Receiver Function	**Initial Scan Above 1000 MHz**	**Final Measurements Above 1000 MHz**
Detector Type:	Peak	Peak/Average
Mode:	Max Hold	Not applicable
Bandwidth:	1 MHz	1 MHz
Amplitude Range:	60 dB	20 dB (typical)
Measurement Time:	Not applicable	> 1 s
Observation Time:	Not applicable	> 15 s
Step Size:	Continuous sweep	Not applicable
Sweep Time:	Coupled	Not applicable

Conducted Antenna Port Emissions

Conducted Antenna Port Emissions measurements were performed in accordance with the standard, against appropriate limits for each detector function.

Prior to testing being performed a suitable RF attenuator and cable were calibrated for the required frequency range. For each measurement range performed, the calibrated level of the attenuator and cable were entered as an offset into the spectrum analyser to compensate for the measurement setup.

Initial measurements covering the entire measurement band in the form of swept scans were performed in order to identify frequencies on which the EUT was generating interference. This determined the frequencies on which measurements were performed. In order to minimise the time taken for the swept measurements, a Peak detector was used in conjunction with the appropriate detector IF measuring bandwidth (see table below). Repetitive scans were performed to allow for emissions with low repetition rates, and for the duty cycle of the EUT. The test configuration was the same for the initial scans as for the final measurements.

Due to the design of the EUT, conducted antenna port measurements were common for both the internal and external antenna connection.

To determine the transmitter output power, the EUT was operated as intended with the spectrum analyser operated in a maximum hold mode over the full operating frequency range of the EUT to identify the highest emission within the band.

To determine spurious emissions levels, the EUT was operated as intended with the spectrum analyser operated in a maximum hold mode over selected frequency ranges between 30 MHz and 26.5 GHz. A reference limit line of 20 dB below the maximum output of the transmitter was noted. Levels within 20 dB of this limit line were then recorded.

Channel Separation and Occupied Bandwidth FCC 15.247(a)(1)

The EUT and spectrum analyser were configured as for conducted antenna port measurements, and as per FCC Public Notice DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

To determine the separation of each transmission channel the analyser was configured to measure two adjacent channels. The analyser was configured with a resolution bandwidth and video bandwidth of at least 1% of the frequency span set on the analyser. The EUT was operated as intended and the analyser set to a maximum hold mode scan to capture the profile of the signals.

The peak points on the two adjacent channels were noted and the separation between them recorded.

To determine the occupied bandwidth, a resolution bandwidth of 10 kHz was used, which is greater than 1% of the 20 dB bandwidth. A video bandwidth of a least the same value was used. The analyser was set for a maximum hold scan to capture the profile of the signal. The peak level was then determined, and a reference established 20 dB below the peak level. The bandwidth was determined at the points where the 20 dB reference crossed the profile of the emission.

The channel separation was then determined as the greater of 25 kHz or the 20 dB bandwidth.

Average Time of Occupancy FCC 15.247(1)(ii)

The EUT and spectrum analyser was configured as for conducted antenna port measurements

To determine the maximum packet length on any given channel, the analyser was configured in the time domain mode and the EUT was configured to operate as intended.

To determine the average occupancy time on any given channel the analyser was configured in the time domain and a 30 second sweep carried out. The number of times the channel was occupied in any 30 second period multiplied by the maximum packet length will give the total time on the given channel.

Number Of Hopping Frequencies FCC 15.247(a)(1)(ii)

The EUT and spectrum analyser was configured as for conducted antenna port measurements, And as per FCC Public Notice DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

To determine the number of hopping frequencies the EUT was set to operate in its normal mode of operation, hopping over all channels that it is intended to operate on.

The spectrum analyser had a span set to cover the frequency band of operation. The resolution bandwidth was set to >= 1% of the span. The video bandwidth was set to be no less than the resolution bandwidth. The sweep was set to auto, the detector function to peak and trace to max hold. This test was also performed with the span set to the lower half the operating frequency range and then to the upper half of the operating frequency range for better resolution.

Peak Output Power FCC 15.247(b)

The EUT and spectrum analyser was configured as for conducted antenna port measurements, And as per FCC Public Notice DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

The applicant to allow for conducted measurements provided a temporary antenna port.

As the frequency range of operation was greater than 10 MHz, the test was performed on the bottom, middle and top channels as per FCC 15.31(m).

The tests were performed at extremes of voltage declared by the applicant.

Band Edge Compliance of RF Conducted Emissions FCC 15.247(c)

The EUT and spectrum analyser were configured as for conducted antenna port measurements, And as per FCC Public Notice DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

A temporary antenna port was provided by the applicant to allow for conducted measurements.

To determine band-edge compliance, the analyser resolution bandwidth was set to >= 1% of the analyser span. The video bandwidth was set to be no less than the resolution bandwidth. The sweep was set to auto and the detector to peak. The trace was set to max hold and a trace was produced.

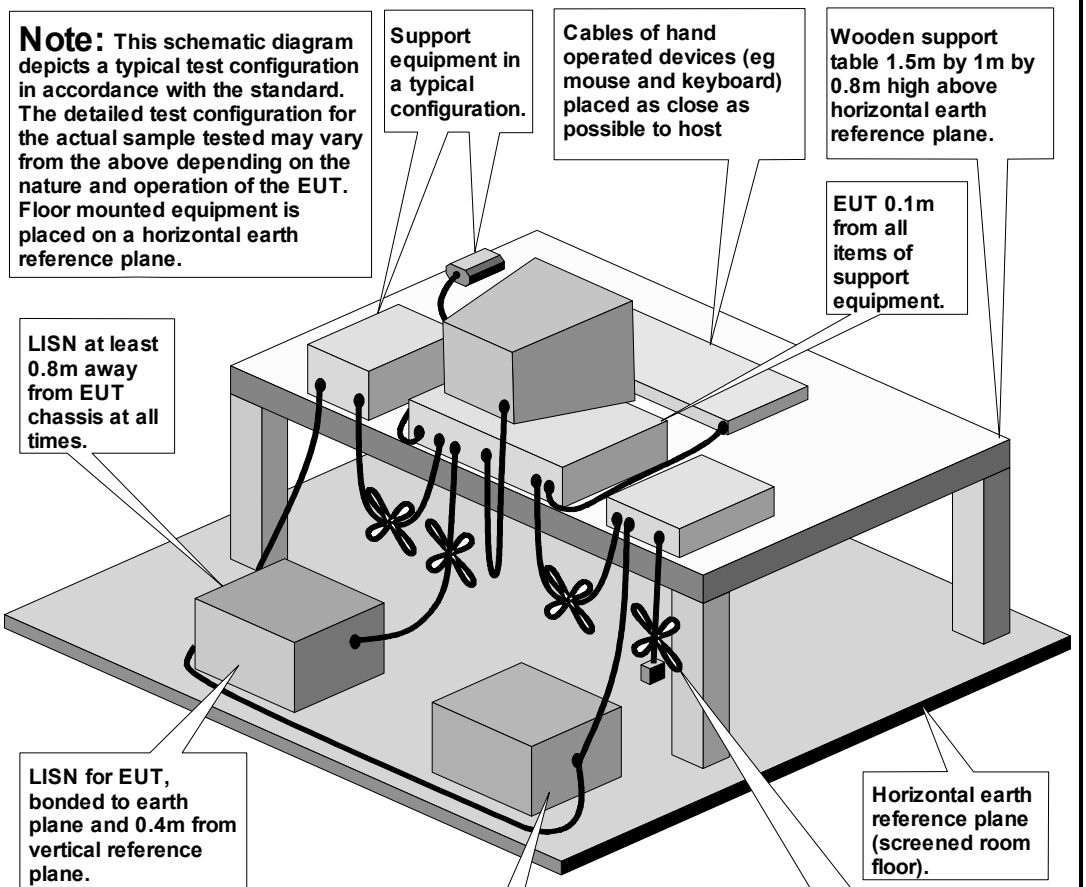
A plot of the upper band edge of the allocated frequency band was produced in both static and hopping modes of operation. A limit line was set to the level of the highest in-band emission with a further limit line set to 20 dB below this. A marker was then placed on the highest out of band emission (The specification states that either the band edge level must be measured or the highest out of band emission, whichever is the greater). The plots show that the highest out of band emission complies with the 20 dBc Limit. The above procedure was then repeated for the lower band edge.

Appendix 3. Test Configuration Drawings

This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\44309JD04\EMICON	Test configuration for measurement of conducted emissions
DRG\44309JD04\EMIRAD	Test configuration for measurement of radiated emissions
DRG\44309JD04\001	Schematic diagram of the EUT, support equipment and interconnecting cables used for the test
DRG\44309JD04\002	Schematic diagram of the EUT, support equipment and interconnecting cables used for the test

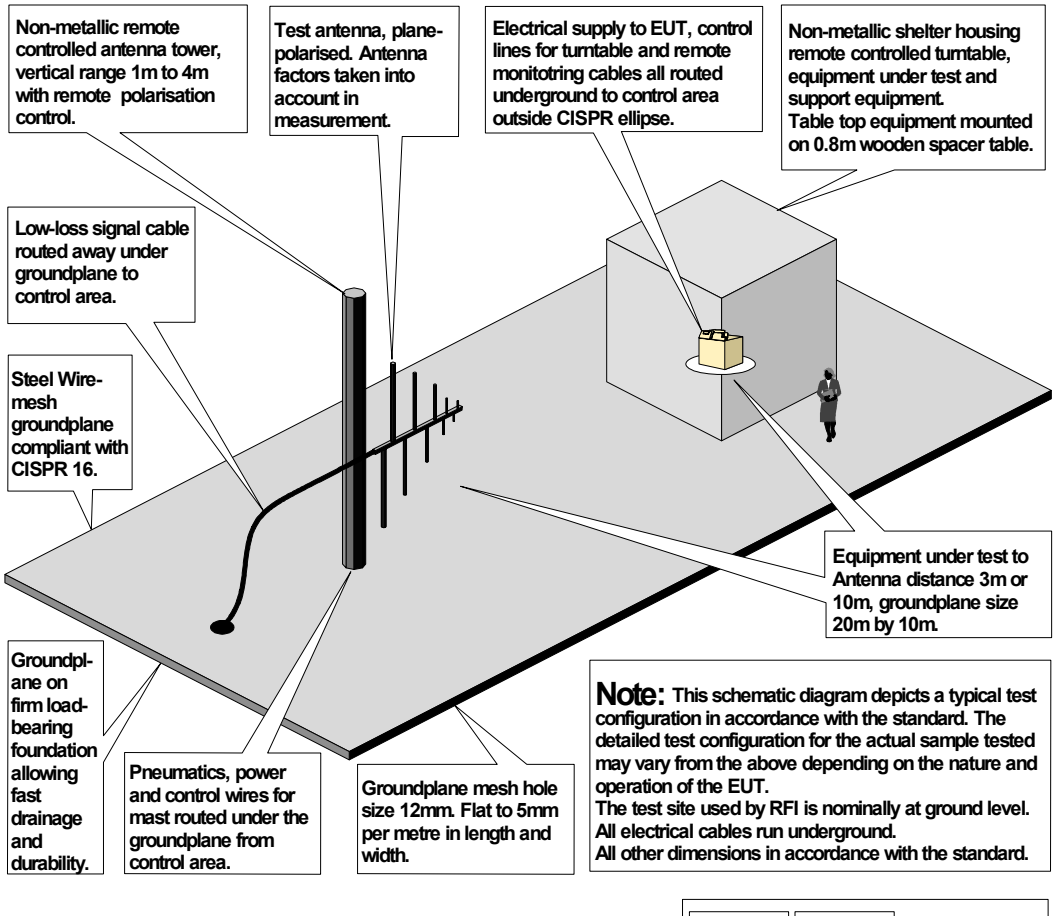
DRG\44309JD04\EMICON



Typical Test Configuration For Conducted Emissions Measurements In Accordance With ANSI C63.4-1992
Tests performed in a screened enclosure

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

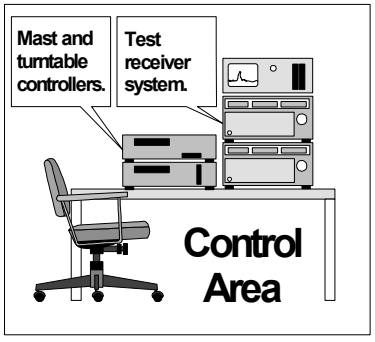
DRG\44309JD04\EMIRAD



Note: This schematic diagram depicts a typical test configuration in accordance with the standard. The detailed test configuration for the actual sample tested may vary from the above depending on the nature and operation of the EUT.
The test site used by RFI is nominally at ground level.
All electrical cables run underground.
All other dimensions in accordance with the standard.

Test Configuration For Radiated Emissions Measurements

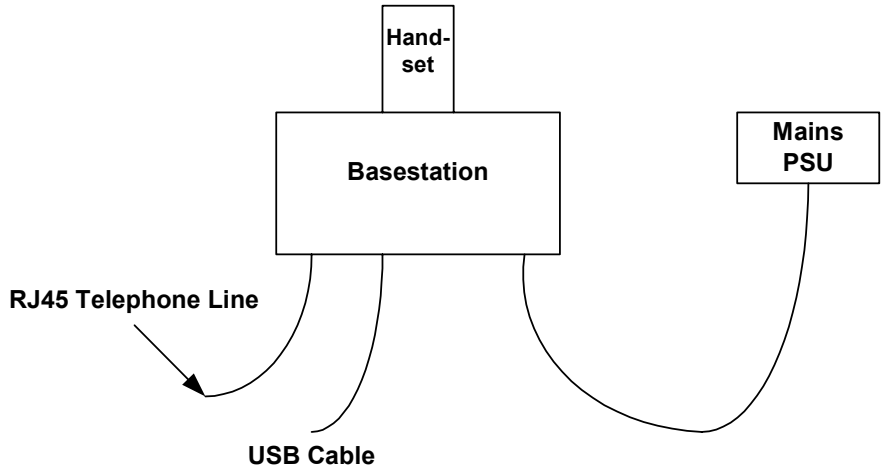
Reflection-free area: >60m by 52m (CISPR ellipse)
Groundplane Earthed
Control room outside CISPR ellipse

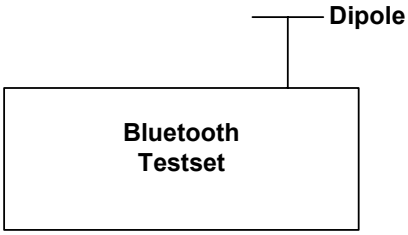


DRG\44309JD04\001

Configuration of EUT and Local Support Equipment

Test Setup for AC Mains Conducted Emissions



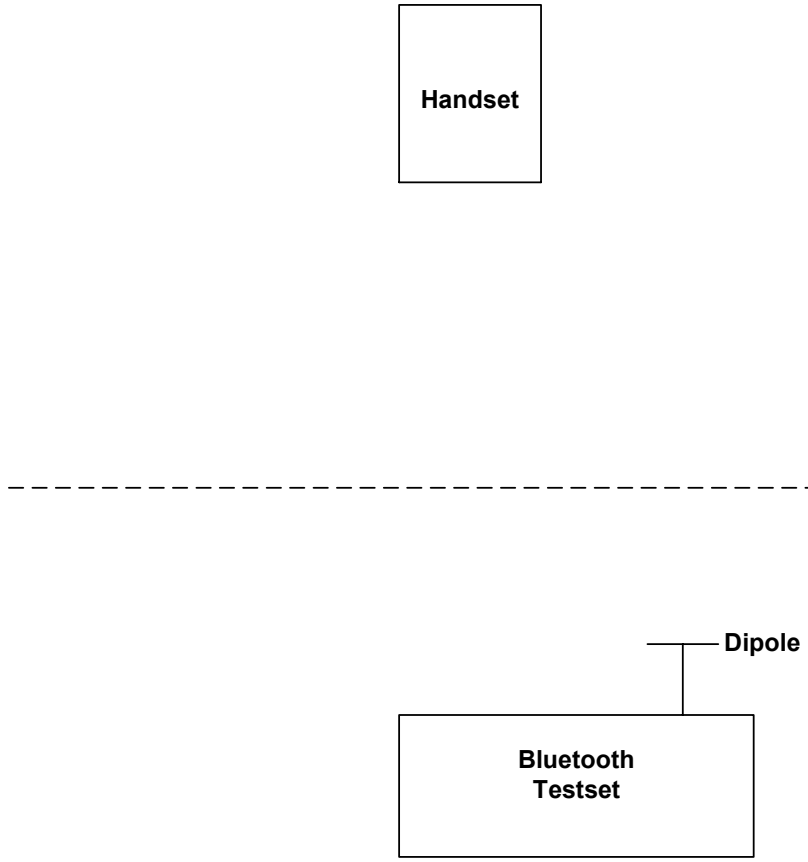


Configuration of Remote Support Equipment

DRG\44309JD04\002

Configuration of EUT and Local Support Equipment

Test Setup for Radiated Emissions



Configuration of Remote Support Equipment

Appendix 4. Graphical Test Results

This appendix contains the following graphs:

Graph Reference Number	Title
GPH\TEST\01	Transmitter Conducted Emissions CDP Handset - Bottom Channel (25.0 MHz to 1.0 GHz)
GPH\TEST\02	Transmitter Conducted Emissions CDP Handset - Bottom Channel (1.0 GHz to 5.0 GHz)
GPH\TEST\03	Transmitter Conducted Emissions CDP Handset - Bottom Channel (5.0 GHz to 10.0 GHz)
GPH\TEST\04	Transmitter Conducted Emissions CDP Handset - Bottom Channel (10.0 GHz to 15.0 GHz)
GPH\TEST\05	Transmitter Conducted Emissions CDP Handset - Bottom Channel (15.0 GHz to 20.0 GHz)
GPH\TEST\06	Transmitter Conducted Emissions CDP Handset - Bottom Channel (20.0 GHz to 26.5 GHz)
GPH\TEST\07	Transmitter Conducted Emissions CDP Handset - Middle Channel (9.0 kHz to 200.0 MHz)
GPH\TEST\08	Transmitter Conducted Emissions CDP Handset - Middle Channel (200.0 MHz to 1.0 GHz)
GPH\TEST\09	Transmitter Conducted Emissions CDP Handset - Middle Channel (1.0 GHz to 5.0 GHz)
GPH\TEST\10	Transmitter Conducted Emissions CDP Handset - Middle Channel (5.0 GHz to 10.0 GHz)
GPH\TEST\11	Transmitter Conducted Emissions CDP Handset - Middle Channel (10.0 GHz to 15.0 GHz)
GPH\TEST\12	Transmitter Conducted Emissions CDP Handset - Middle Channel (15.0 GHz to 20.0 GHz)
GPH\TEST\13	Transmitter Conducted Emissions CDP Handset - Middle Channel (20.0 GHz to 26.5 GHz)
GPH\TEST\14	Transmitter Conducted Emissions CDP Handset - Top Channel (9.0 kHz to 200.0 kHz)
GPH\TEST\15	Transmitter Conducted Emissions CDP Handset - Top Channel (200.0 kHz to 1.0 GHz)
GPH\TEST\16	Transmitter Conducted Emissions CDP Handset - Top Channel (1.0 GHz to 5.0 GHz)
GPH\TEST\18	Transmitter Conducted Emissions CDP Handset - Top Channel (5.0 GHz to 10.0 GHz)

Graphical Test Results (continued)

Graph Reference Number	Title
GPH\TEST\19	Transmitter Conducted Emissions CDP Handset - Top Channel (10.0 GHz to 15.0 GHz)
GPH\TEST\20	Transmitter Conducted Emissions CDP Handset - Top Channel (15.0 GHz to 20.0 GHz)
GPH\TEST\21	Transmitter Conducted Emissions CDP Handset - Top Channel (20.0 GHz to 26.5 GHz)
GPH\44309JD04\001A	AC Conducted Mains Emissions
GPH\44309\CPBOT01	Conducted Carrier Power. Bottom Channel 3.25V
GPH\44309\CPBOT02	Conducted Carrier Power. Middle Channel 3.25V
GPH\44309\CPBOT03	Conducted Carrier Power. Bottom Channel 3.25V
GPH\44309\CPBOT04	Conducted Carrier Power. Bottom Channel 4.2V
GPH\44309\CPBOT05	Conducted Carrier Power. Middle Channel 4.2V
GPH\44309\CPBOT06	Conducted Carrier Power. Bottom Channel 4.2V
GPH\44309\NOHF01	Number of Hopping Frequencies
GPH\44309\T0001	Time of Occupancy
GPH\44309\NOT001	Number of transmissions in 30 seconds
GPH\44309\CFS01	Carrier Frequency Separation
GPH\44309\20DBBW01	20 dB Bandwidth FL Delta
GPH\44309\20DBBW02	20 dB Bandwidth FH Delta

Graphical Test Results (continued)

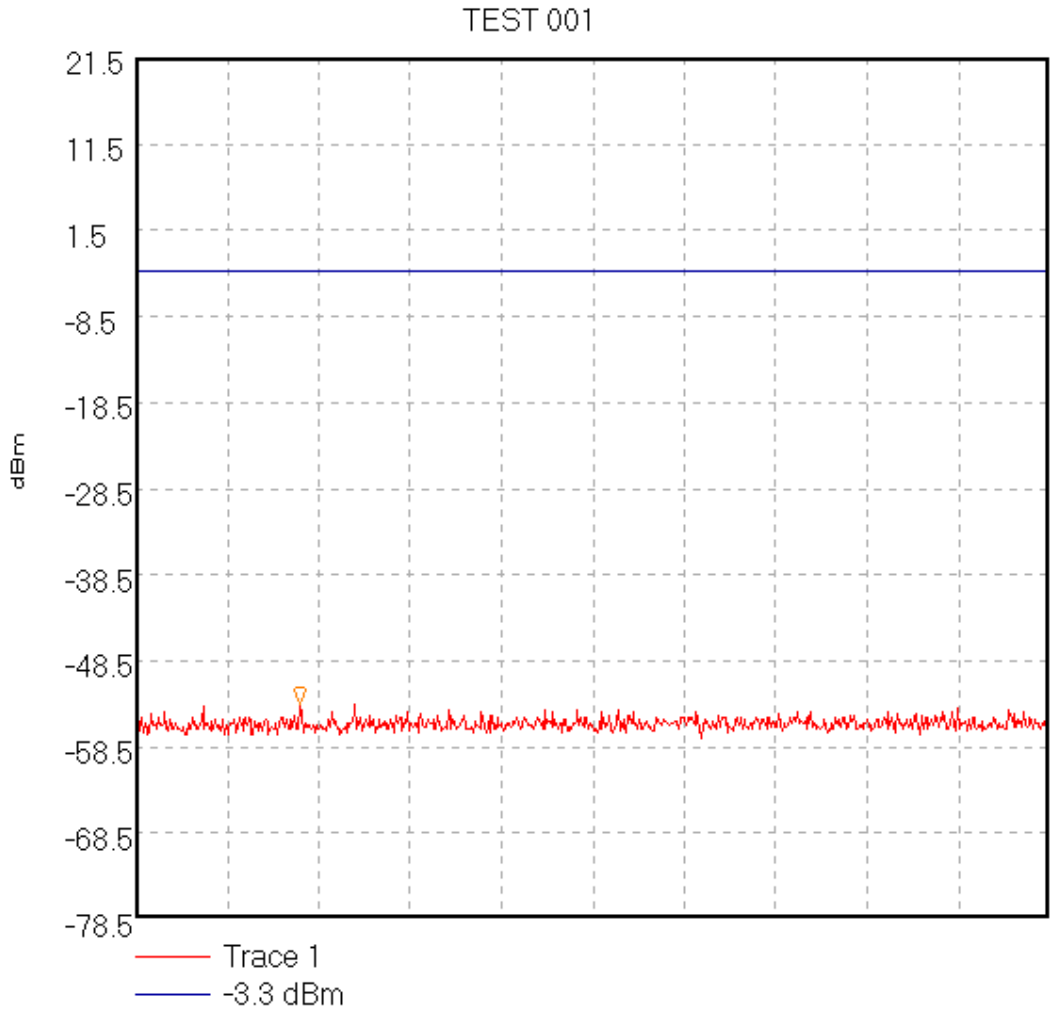
Graph Reference Number	Title
GPH\44309JD05\003	Receiver Radiated Spurious Emissions (200.0 MHz to 1.0 GHz)
GPH\44309JD05\005	Receiver Radiated Spurious Emissions (1.0 GHz to 2.0 GHz)
GPH\44309JD05\008	Receiver Radiated Spurious Emissions (2.0 GHz to 4.0 GHz)
GPH\44309JD05\009	Transmitter Radiated Spurious Emissions (2.0 GHz to 4.0 GHz)
GPH\44309JD05\010	Transmitter Radiated Spurious Emissions (1.0 GHz to 2.0 GHz)
GPH\44309JD05\013	Transmitter Radiated Spurious Emissions (200.0 MHz to 1.0 GHz)
GPH\44309JD05\014	Transmitter Radiated Spurious Emissions (30.0 MHz to 200.0 MHz)
GPH\44309JD05\016	Transmitter Radiated Spurious Emissions (4.0 GHz to 6.0 GHz)
GPH\44309JD05\017	Transmitter Radiated Spurious Emissions (6.0 GHz to 8.0 GHz)
GPH\44309JD05\019	Transmitter Radiated Spurious Emissions (8.0 GHz to 12.5 MHz)
GPH\44309JD05\020	Transmitter Radiated Spurious Emissions (12.5 GHz to 18.0 GHz)
GPH\44309JD05\021	Transmitter Radiated Spurious Emissions (18.0 GHz to 26.5 GHz)
GPH\44309JD05\034	Receiver Radiated Spurious Emissions (30.0 MHz to 200.0 MHz)
GPH\44309\RE004	Receiver Radiated Spurious Emissions (4.0 GHz to 6.0 GHz)
GPH\44309\RE005	Receiver Radiated Spurious Emissions (6.0 GHz to 8.0 GHz)
GPH\44309\RE006	Receiver Radiated Spurious Emissions (8.0 GHz to 12.5 GHz)

Graphical Test Results (continued)

Graph Reference Number	Title
GPH\44309BEC\001	Conducted Emissions Lower Band Edge Static
GPH\44309BEC\002	Conducted Emissions Upper Band Edge Static
GPH\44309BEC\003	Conducted Emissions Lower Band Edge Hopping all Channels
GPH\44309BEC\004	Conducted Emissions Upper Band Edge Hopping all Channels
GPH\44309BER\005	Radiated Emissions Upper Band Edge Static
GPH\44309BER\007	Radiated Emissions Upper Band Edge Static Hopping all Channels
GPH\44309BER\008	Radiated Emissions Upper Band Edge Static
GPH\44309BER\009	Radiated Emissions Upper Band Edge Static Hopping all Channels
GPH\44309BER\010	Radiated Emissions Lower Band Edge Static
GPH\44309BER\011	Radiated Emissions Lower Band Edge Static Hopping all Channels

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

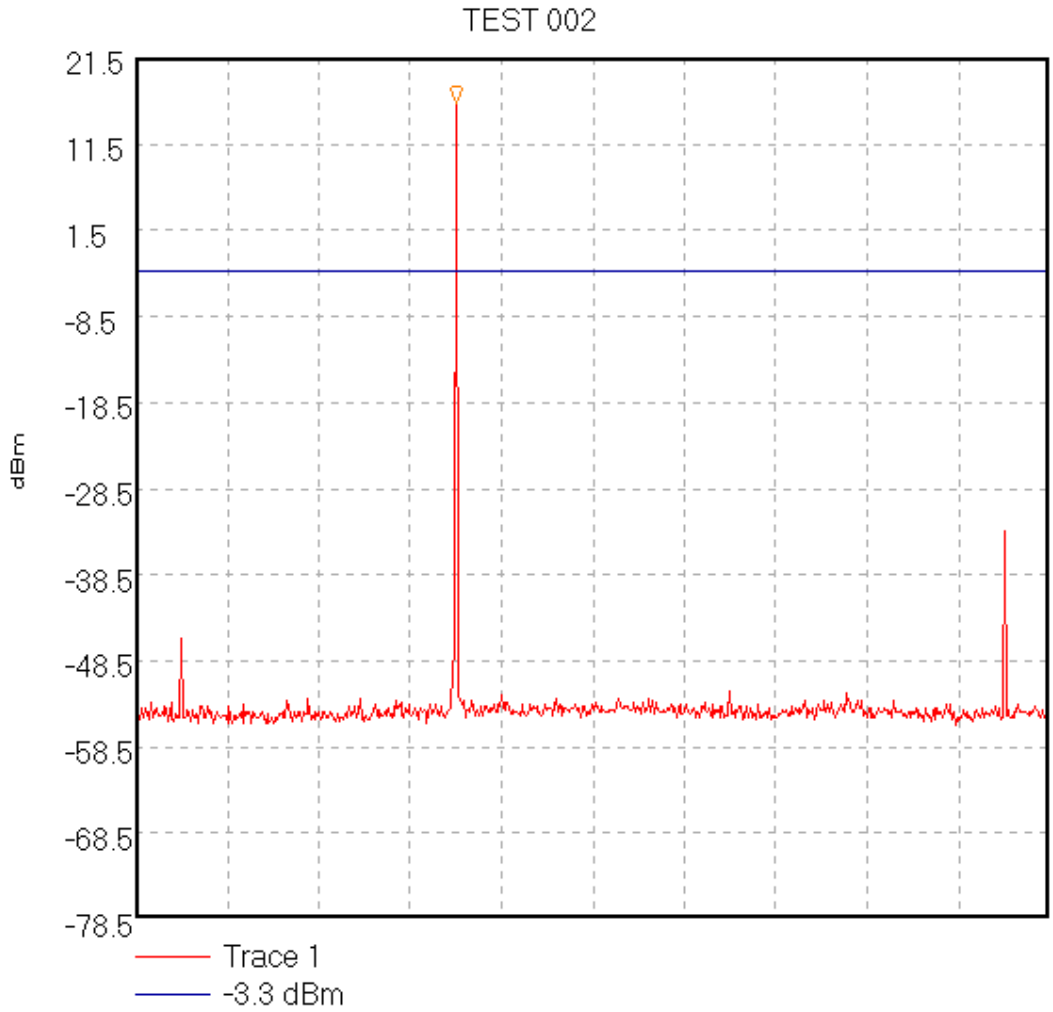
GPH\TEST\001
Transmitter Conducted Emissions CDP Handset - Bottom Channel
(25.0 MHz to 1.0 GHz)



Start 25.0 MHz; Stop 1.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Peak 200.5 MHz, -53.5 dBm
Display Line: -3.3 dBm;
13/12/02 14:34:45

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

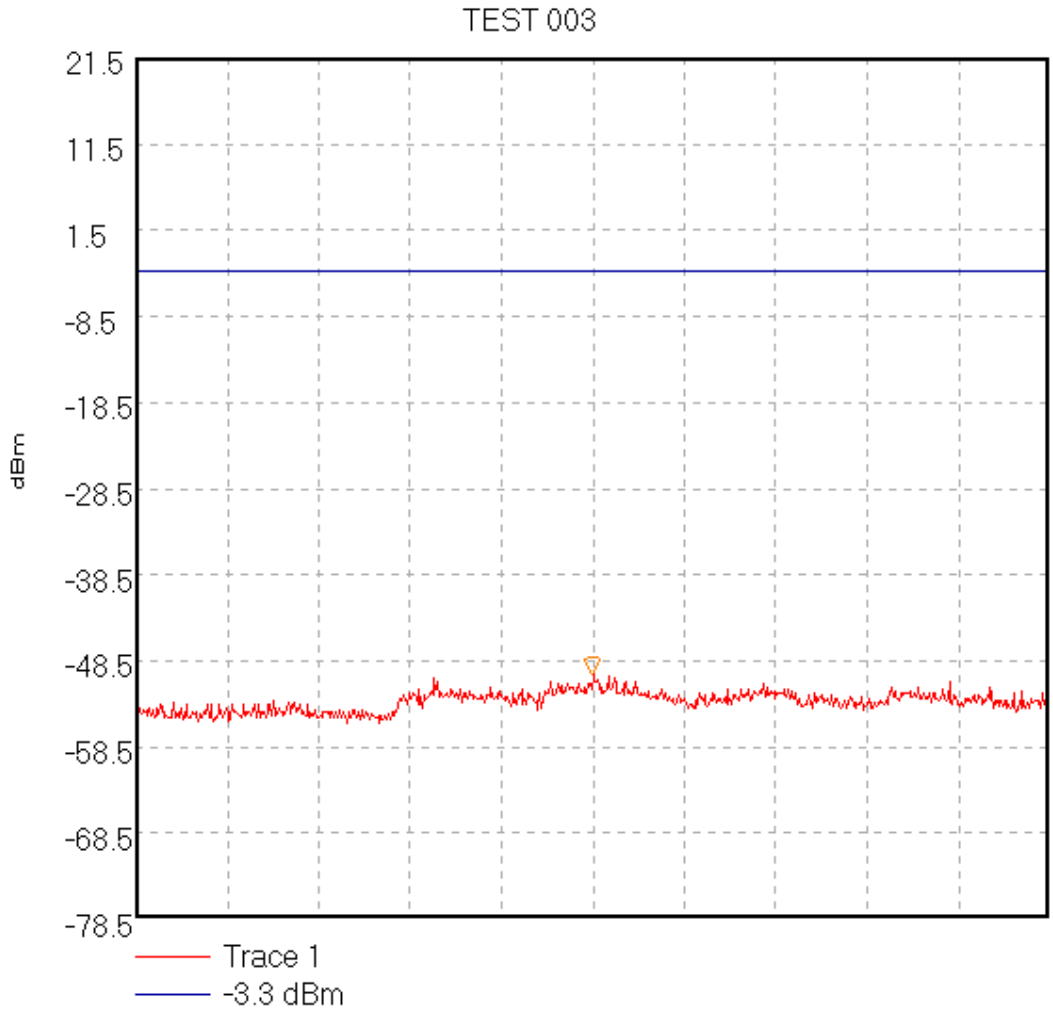
GPH\TEST\002
Transmitter Conducted Emissions for CDP Handset - Bottom Channel
(1.0 GHz to 5.0 GHz)



Start 1.0 GHz; Stop 5.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.0 S
Peak 2.4 GHz, 16.17 dBm
Display Line: -3.3 dBm;
13/12/02 14:38:38

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

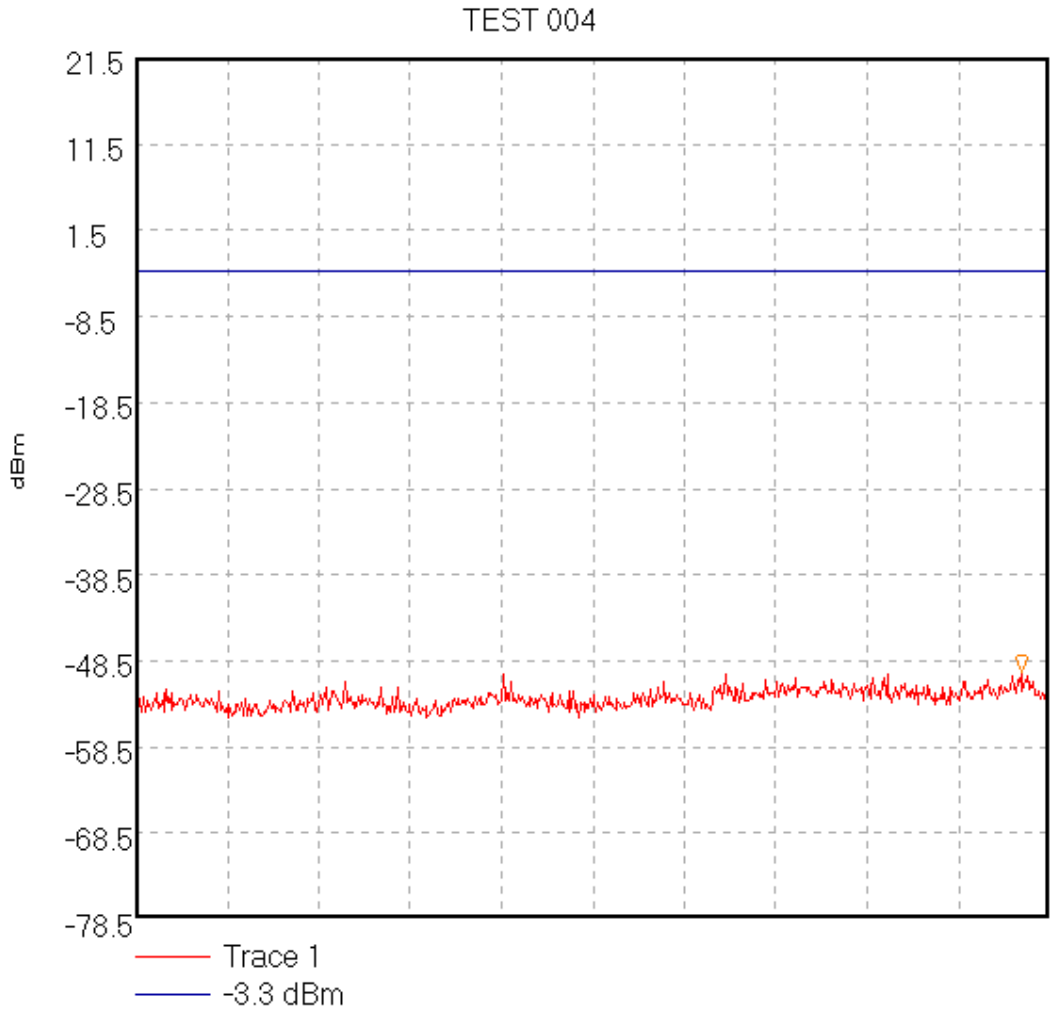
GPH\TEST\003
Transmitter Conducted Emissions CDP Handset - Bottom Channel
(5.0 GHz to 10.0 GHz)



Start 5.0 GHz; Stop 10.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.3 S
Peak 7.5 GHz, -50.0 dBm
Display Line: -3.3 dBm;
13/12/02 14:44:38

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

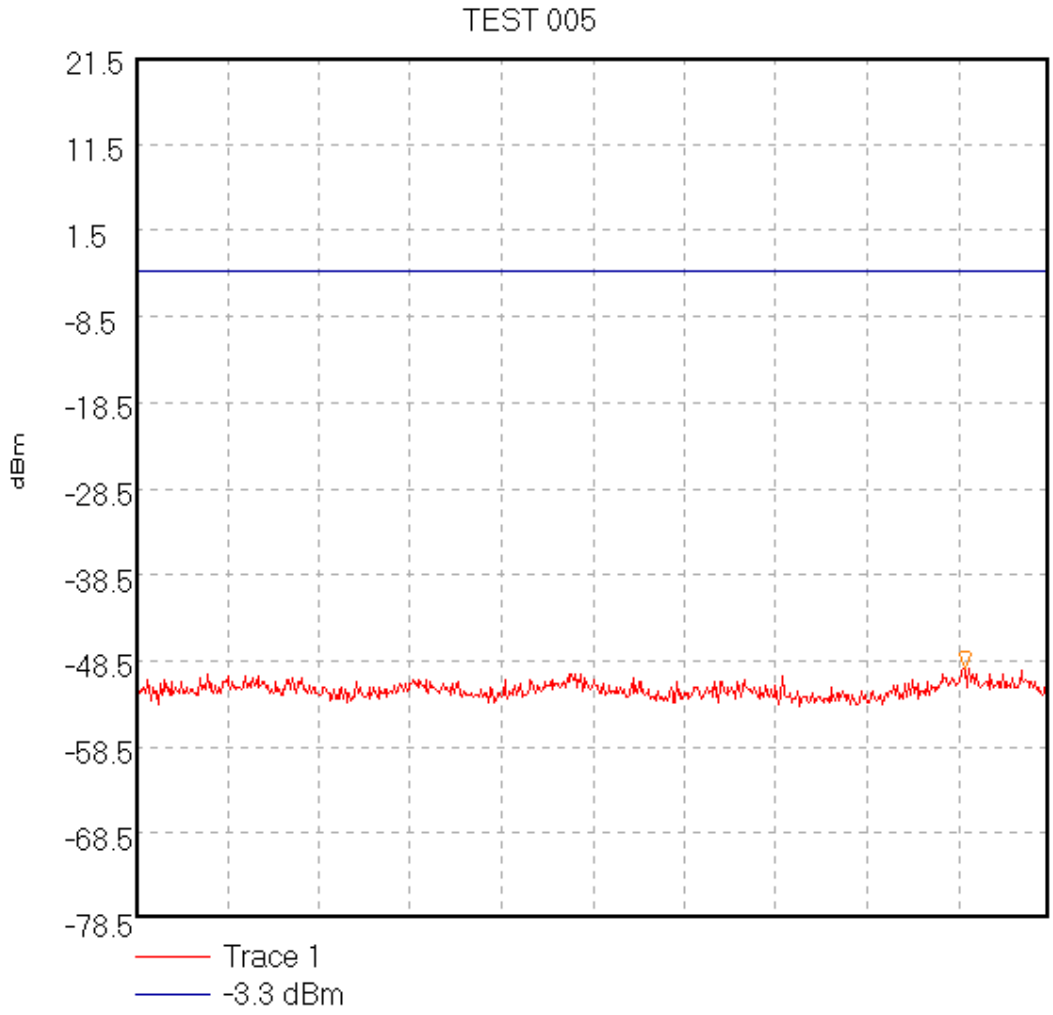
GPH\TEST\004
Transmitter Conducted Emissions CDP Handset - Bottom Channel
(10.0 GHz to 15.0 GHz)



Start 10.0 GHz; Stop 15.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.3 S
Peak 14.841667 GHz, -49.83 dBm
Display Line: -3.3 dBm;
13/12/02 14:45:22

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

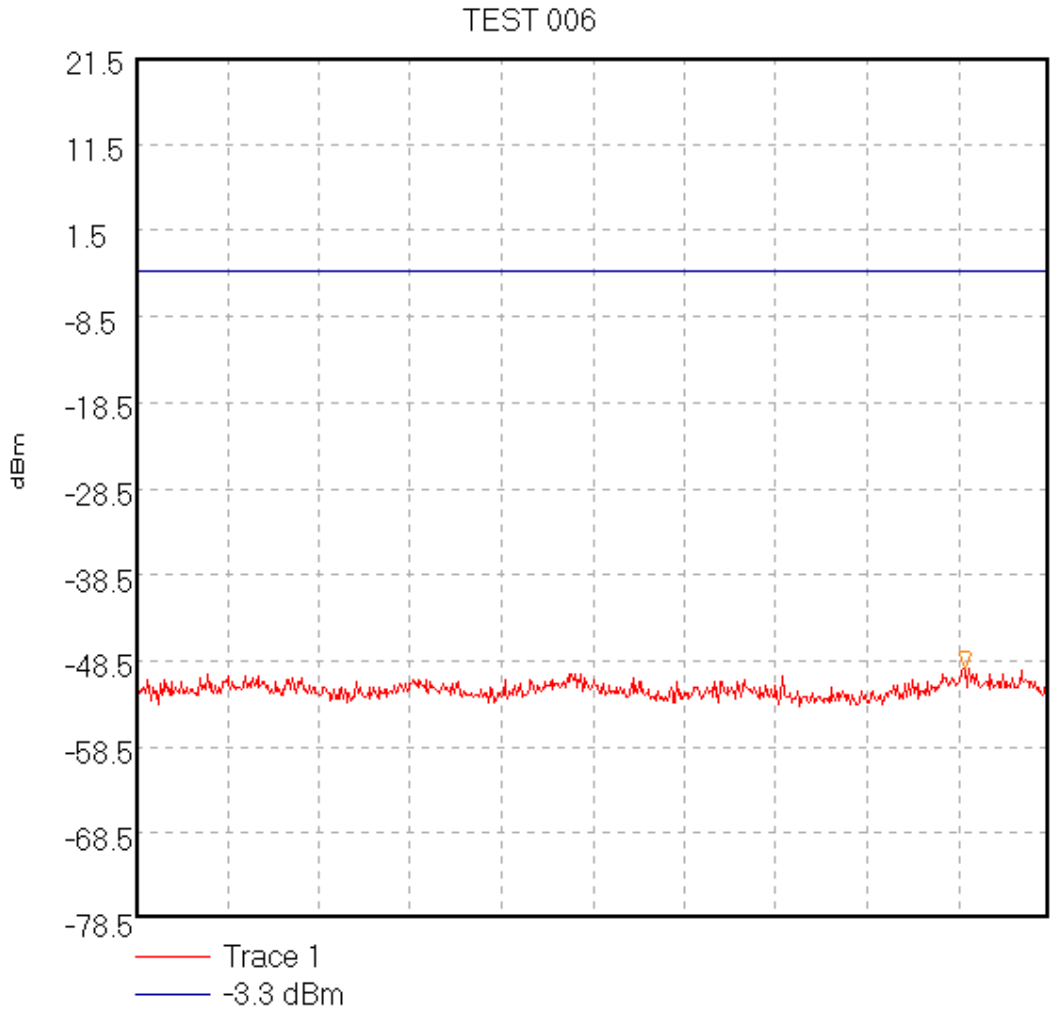
GPH\TEST\005
Transmitter Conducted Emissions CDP Handset - Bottom Channel
(15.0 GHz to 20.0 GHz)



Start 15.0 GHz; Stop 20.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.3 S
Peak 19.533333 GHz, -49.33 dBm
Display Line: -3.3 dBm;
13/12/02 14:46:04

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

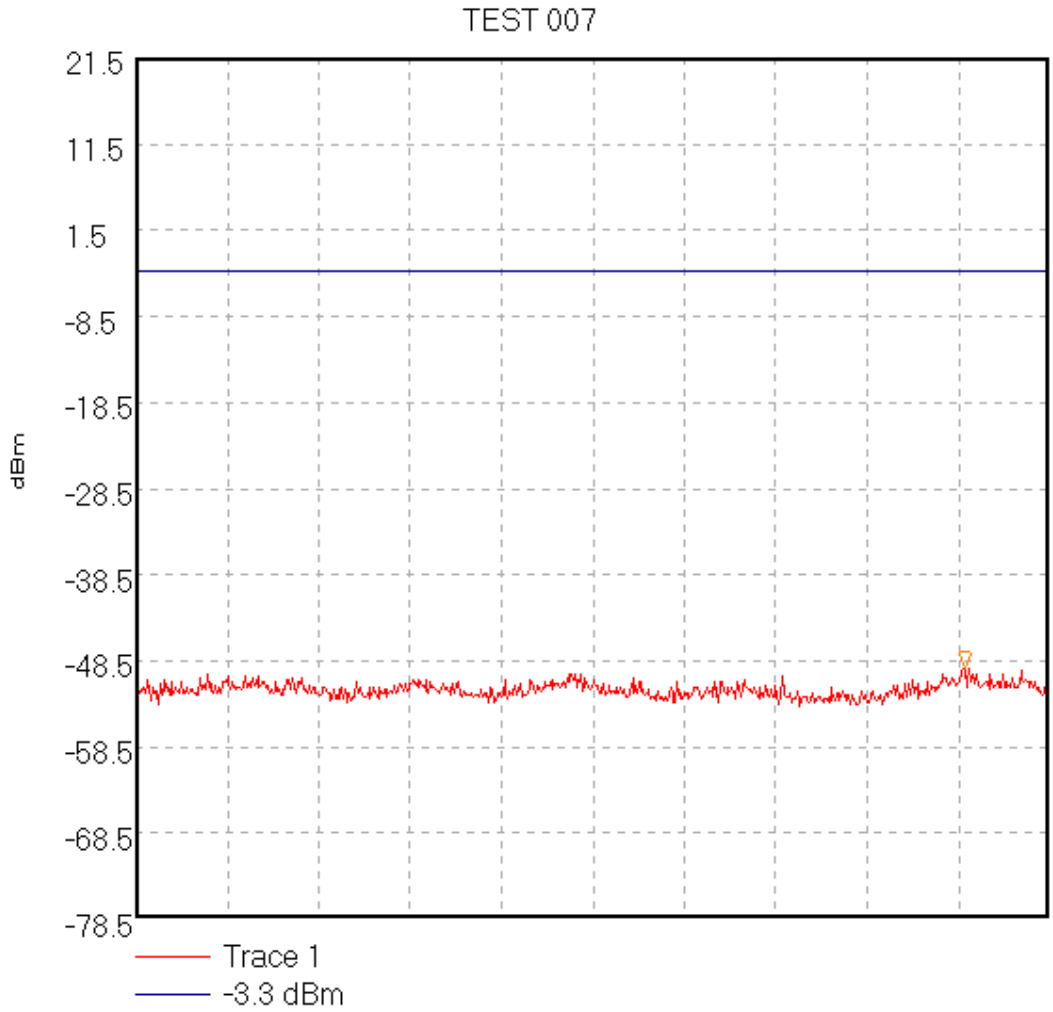
GPH\TEST\006
Transmitter Conducted Emissions CDP Handset - Bottom Channel
(20.0 GHz to 26.5 GHz)



Start 20.0 GHz; Stop 26.5 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.7 S
Peak 25.893333 GHz, -49.33 dBm
Display Line: -3.3 dBm;
13/12/02 14:46:42

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

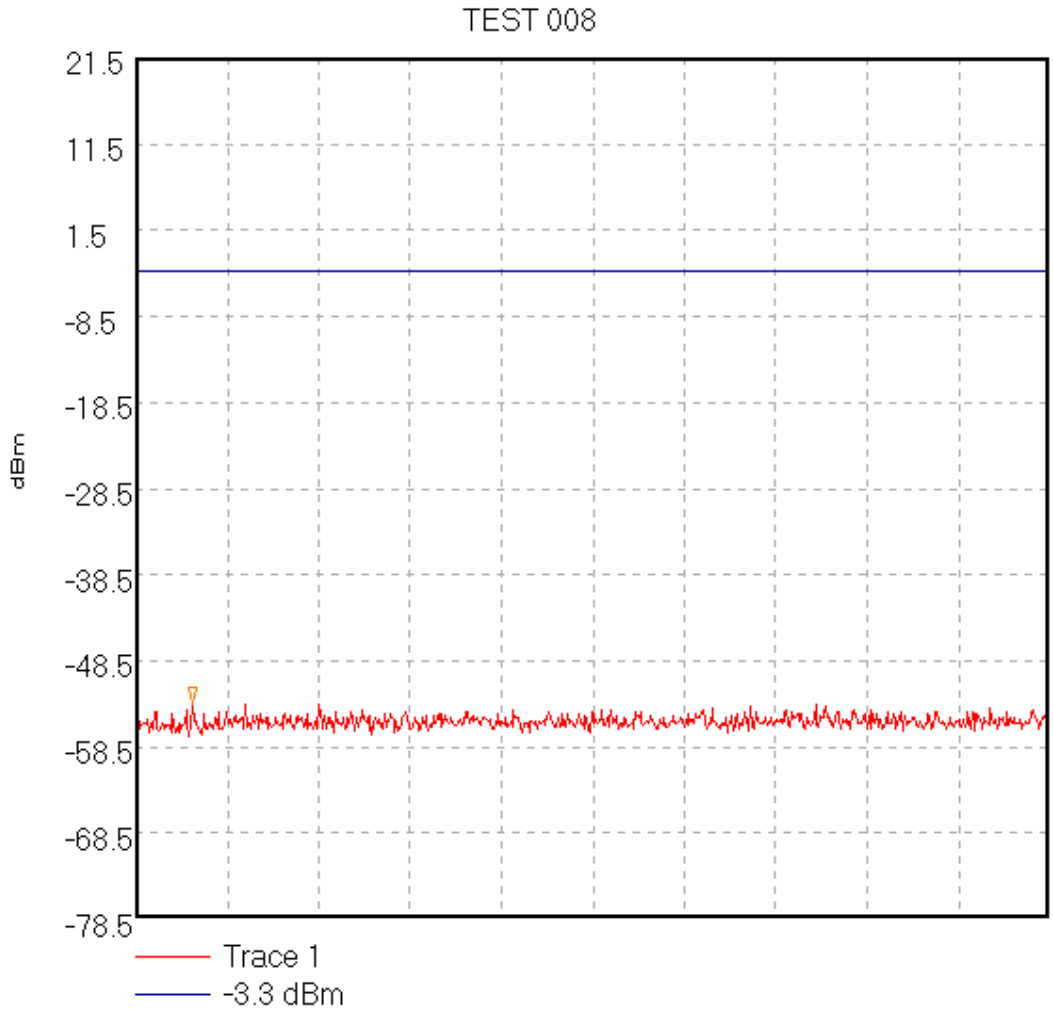
GPH\TEST\007
Transmitter Conducted Emissions CDP Handset - Middle Channel
(9.0 kHz to 200.0 MHz)



Start 9.0 kHz; Stop 200.0 MHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 50.0 mS
Peak 181.334173 MHz, -49.33 dBm
Display Line: -3.3 dBm;
13/12/02 14:48:21

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

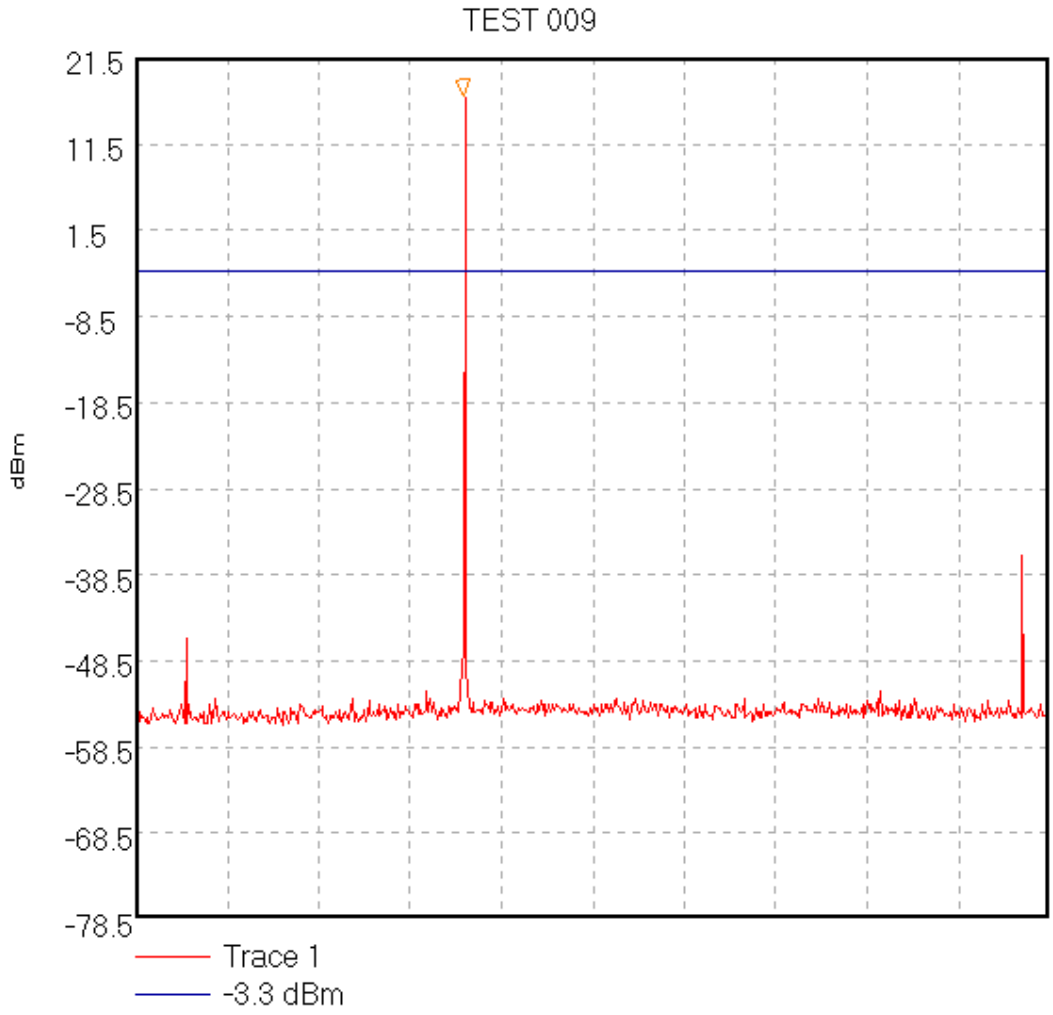
GPH\TEST\008
Transmitter Conducted Emissions CDP Handset - Middle Channel
(200.0 MHz to 1.0 GHz)



Start 200.0 MHz; Stop 1.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 200.0 mS
Peak 249.333333 MHz, -53.67 dBm
Display Line: -3.3 dBm;
13/12/02 14:49:15

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

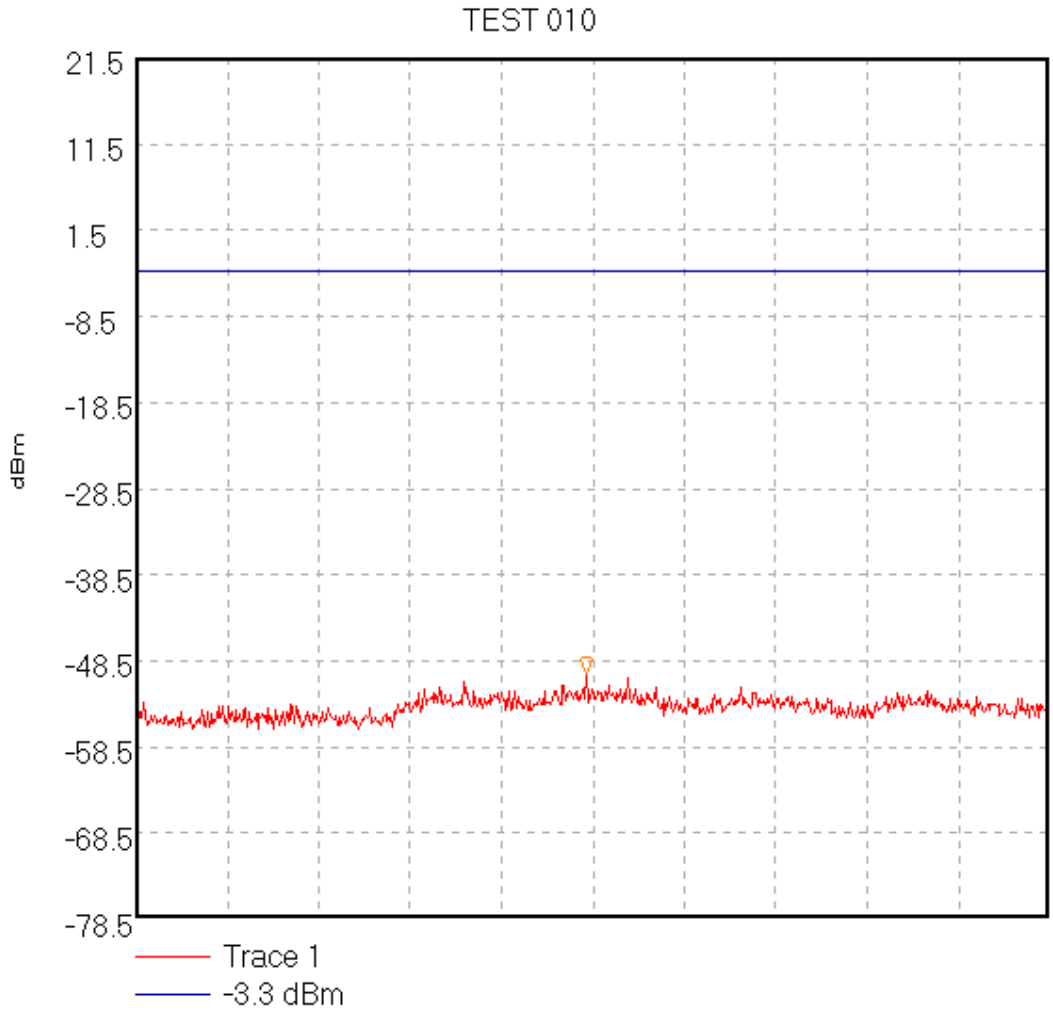
GPH\TEST\009
Transmitter Conducted Emissions CDP Handset - Middle Channel
(1.0 GHz to 5.0 GHz)



Start 1.0 GHz; Stop 5.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.0 S
Peak 2.44 GHz, 17.0 dBm
Display Line: -3.3 dBm;
13/12/02 14:50:21

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

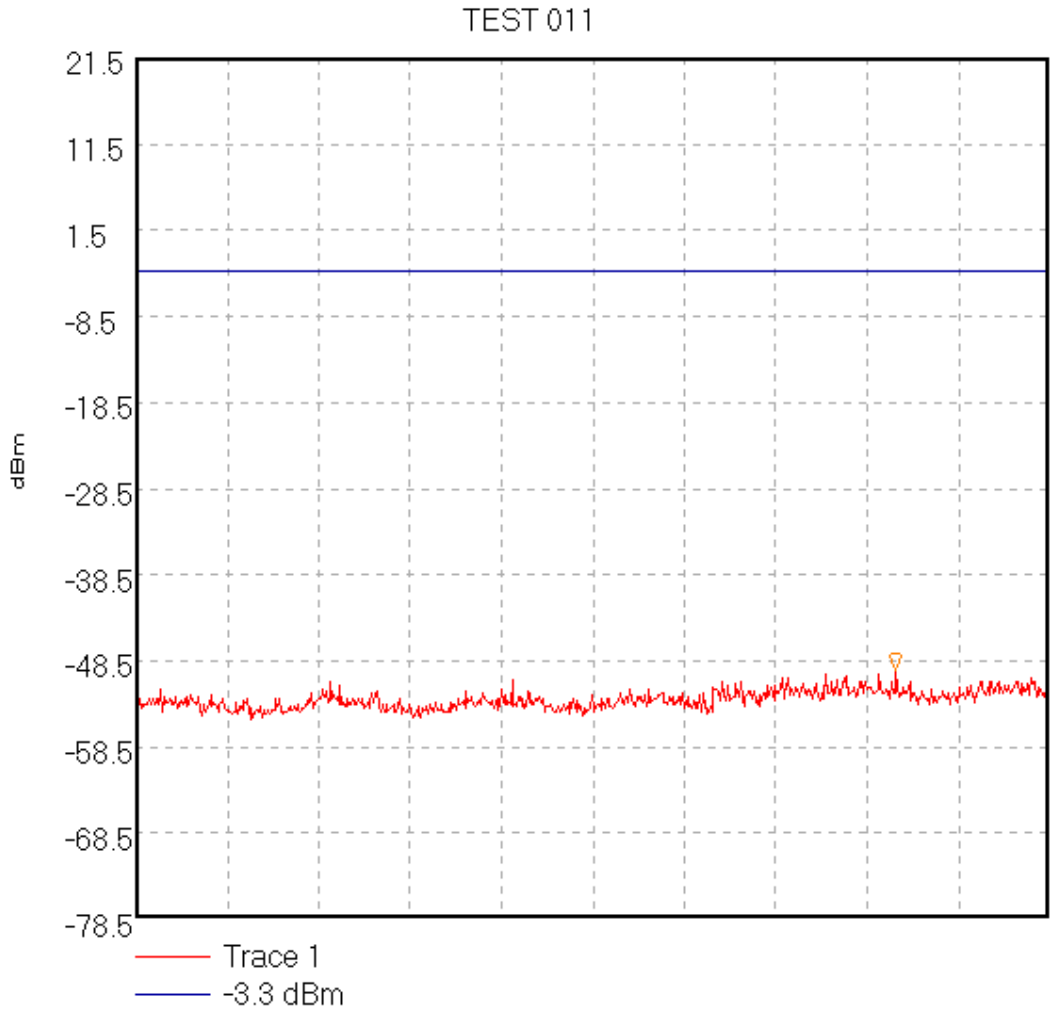
GPH\TEST\010
Transmitter Conducted Emissions CDP Handset - Middle Channel
(5.0 GHz to 10.0 GHz)



Start 5.0 GHz; Stop 10.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.3 S
Peak 7.466667 GHz, -50.0 dBm
Display Line: -3.3 dBm;
13/12/02 14:54:16

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

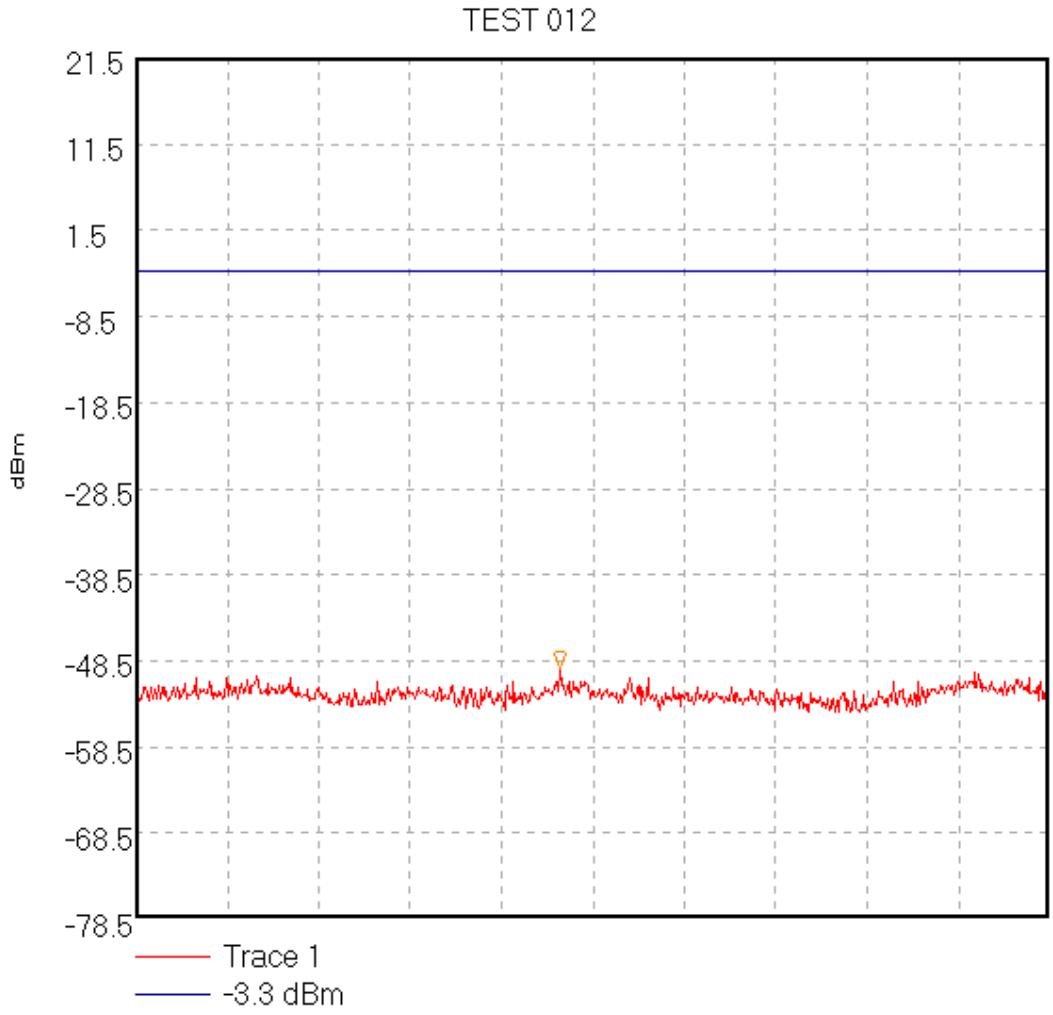
GPH\TEST\011
Transmitter Conducted Emissions CDP Handset - Middle Channel
(10.0 GHz to 15.0 GHz)



Start 10.0 GHz; Stop 15.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.3 S
Peak 14.158333 GHz, -49.67 dBm
Display Line: -3.3 dBm;
13/12/02 14:54:49

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

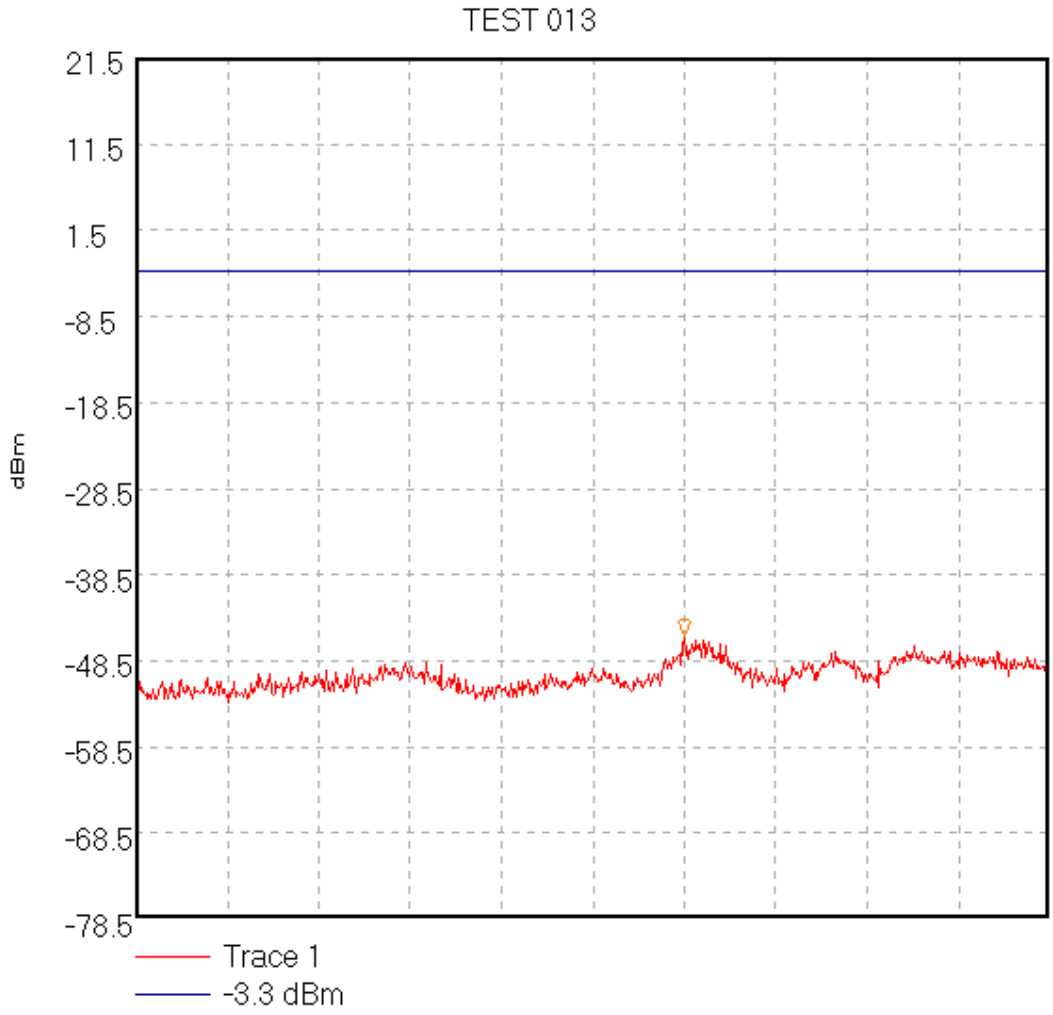
GPH\TEST\012
Transmitter Conducted Emissions CDP Handset - Middle Channel
(15.0 GHz to 20.0 GHz)



Start 15.0 GHz; Stop 20.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.3 S
Peak 17.316667 GHz, -49.33 dBm
Display Line: -3.3 dBm;
13/12/02 14:55:32

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

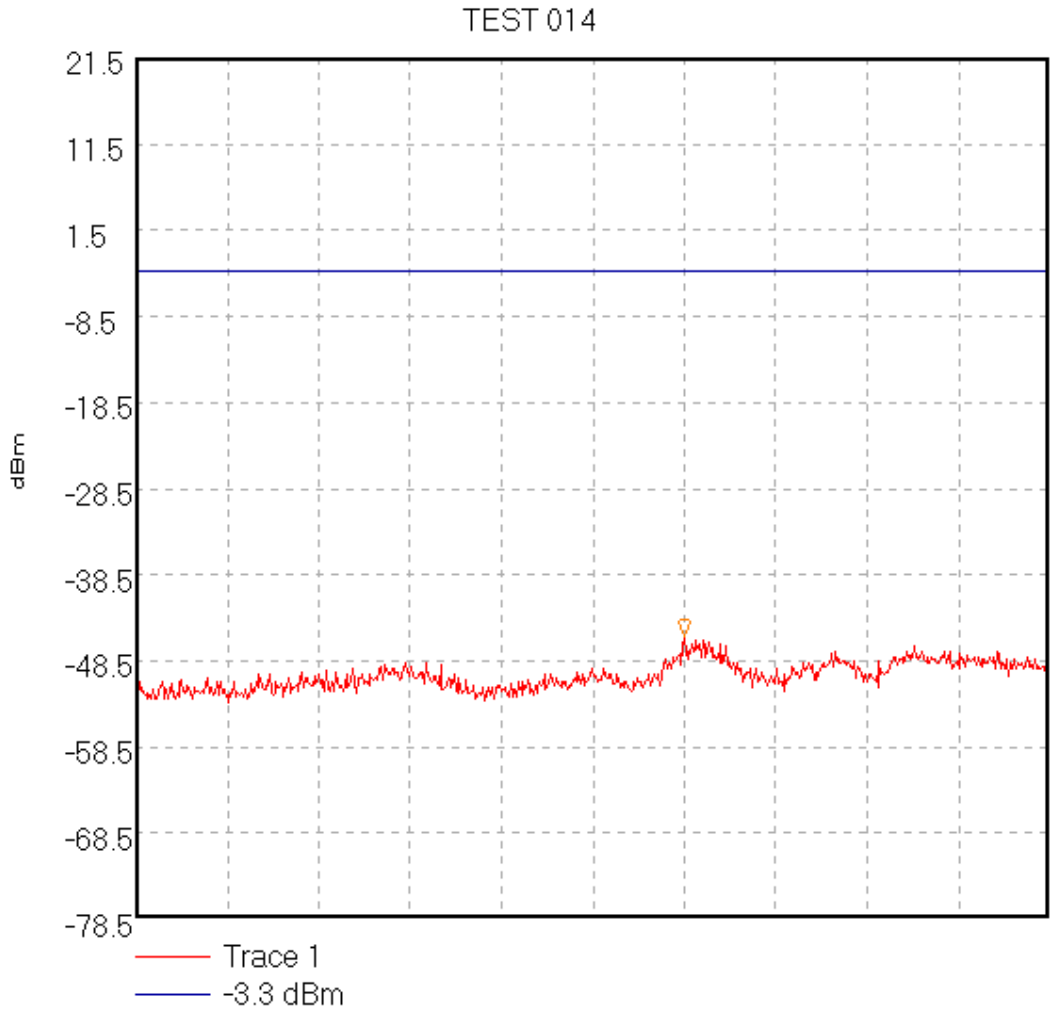
GPH\TEST\013
Transmitter Conducted Emissions CDP Handset - Middle Channel
(20.0 GHz to 26.5 GHz)



Start 20.0 GHz; Stop 26.5 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.7 S
Peak 23.9 GHz, -45.67 dBm
Display Line: -3.3 dBm;
13/12/02 14:56:37

Test Of: Mansella Ltd.
CDP Handset
To: FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247

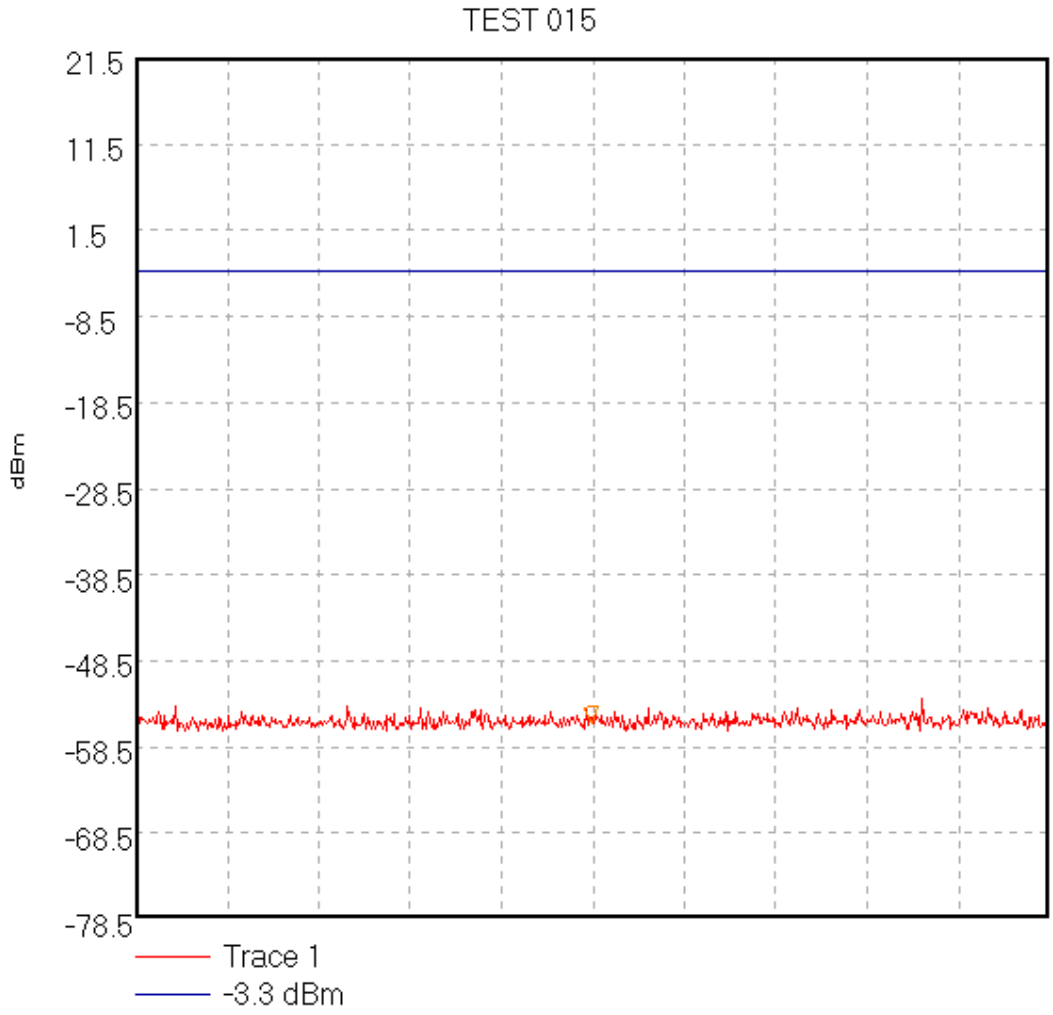
GPH\TEST\014
Transmitter Conducted Emissions CDP Handset - Top Channel
(9.0 kHz to 200.0 kHz)



Start 9.0 kHz; Stop 200.0 kHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 50.0 mS
Peak 123.6 kHz, -45.67 dBm
Display Line: -3.3 dBm;
13/12/02 14:58:14

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

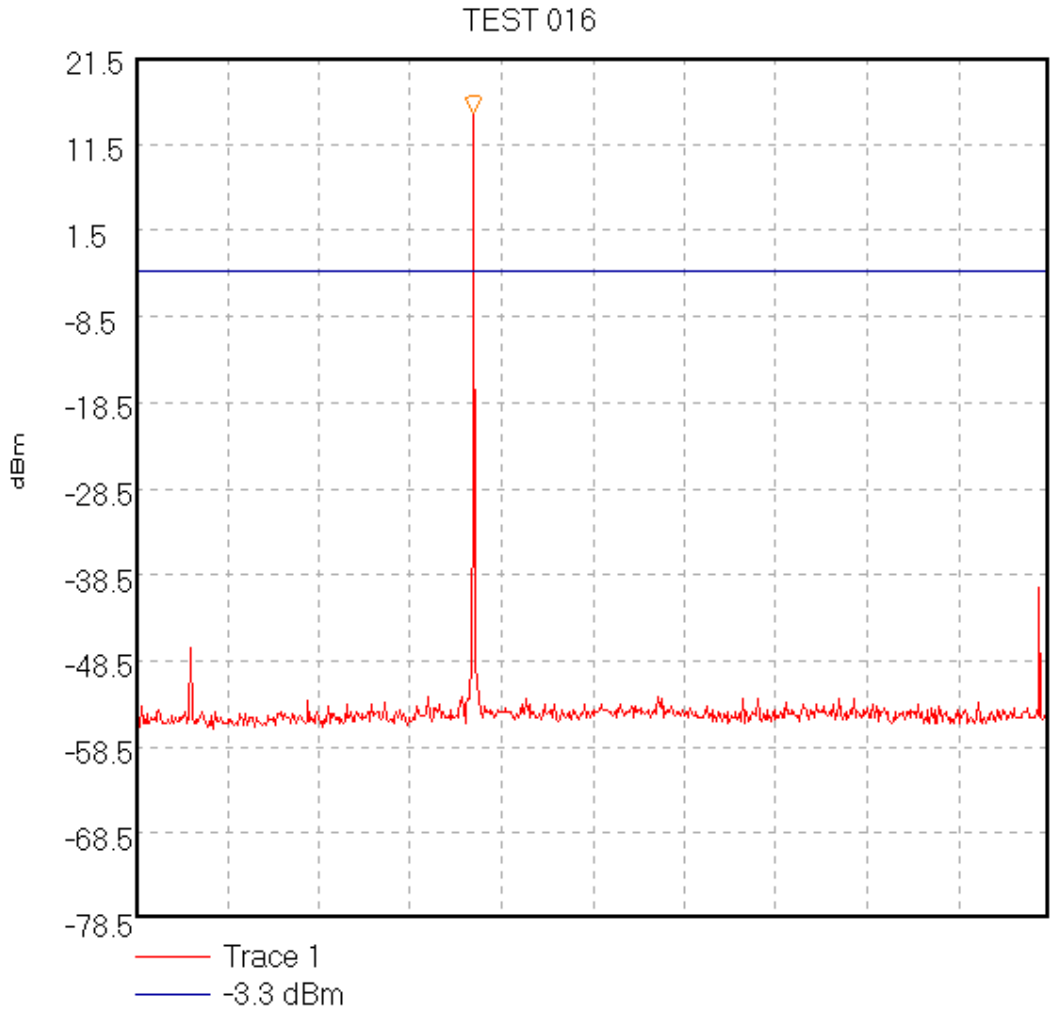
GPH\TEST\015
Transmitter Conducted Emissions CDP Handset - Top Channel
(200.0 kHz to 1.0 GHz)



Start 200.0 kHz; Stop 1.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Peak 500.1 MHz, -55.83 dBm
Display Line: -3.3 dBm;
13/12/02 14:59:26

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

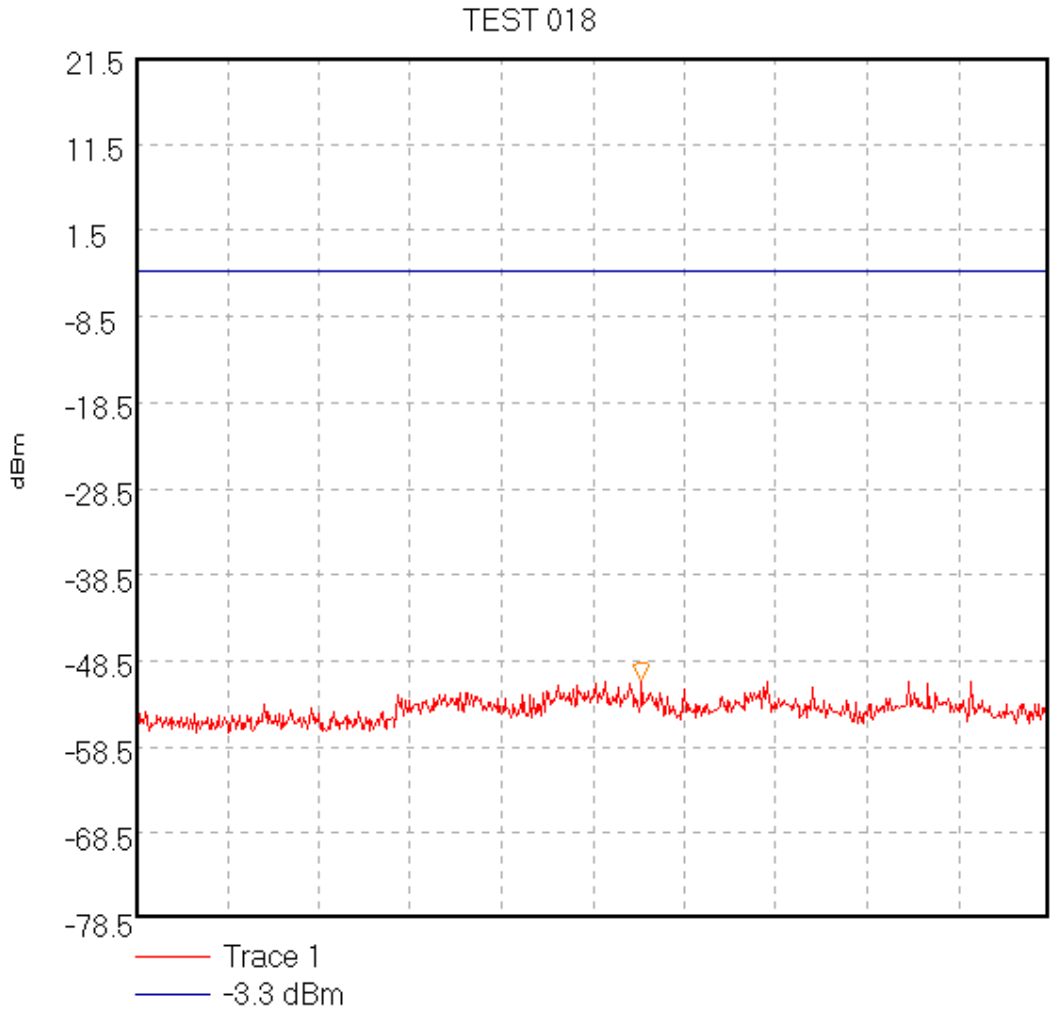
GPH\TEST\016
Transmitter Conducted Emissions CDP Handset - Top Channel
(1.0 GHz to 5.0 GHz)



Start 1.0 GHz; Stop 5.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.0 S
Peak 2.48 GHz, 15.17 dBm
Display Line: -3.3 dBm;
13/12/02 15:00:16

Test Of: Mansella Ltd.
CDP Handset
To: FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247

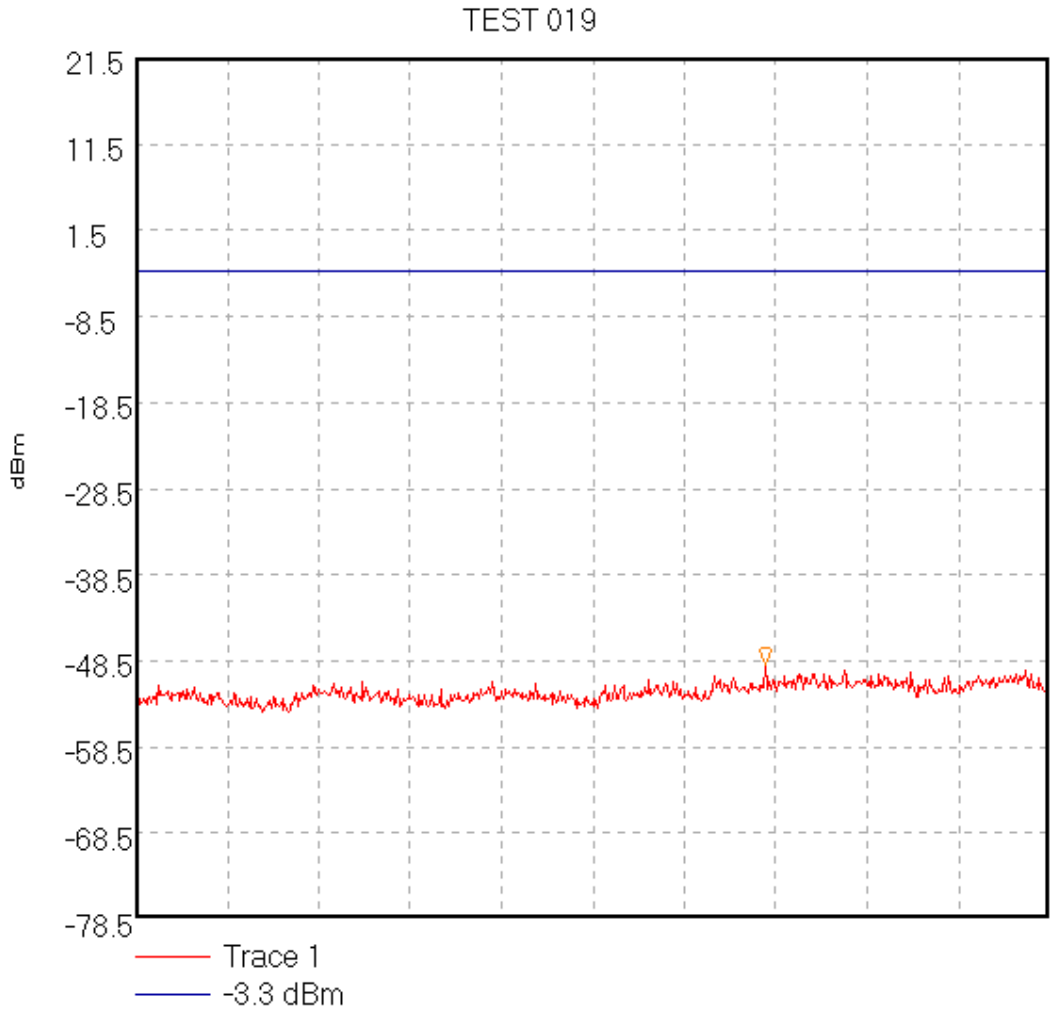
GPH\TEST\018
Transmitter Conducted Emissions CDP Handset - Top Channel
(5.0 GHz to 10.0 GHz)



Start 5.0 GHz; Stop 10.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.3 S
Peak 7.766667 GHz, -50.67 dBm
Display Line: -3.3 dBm;
13/12/02 15:07:17

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

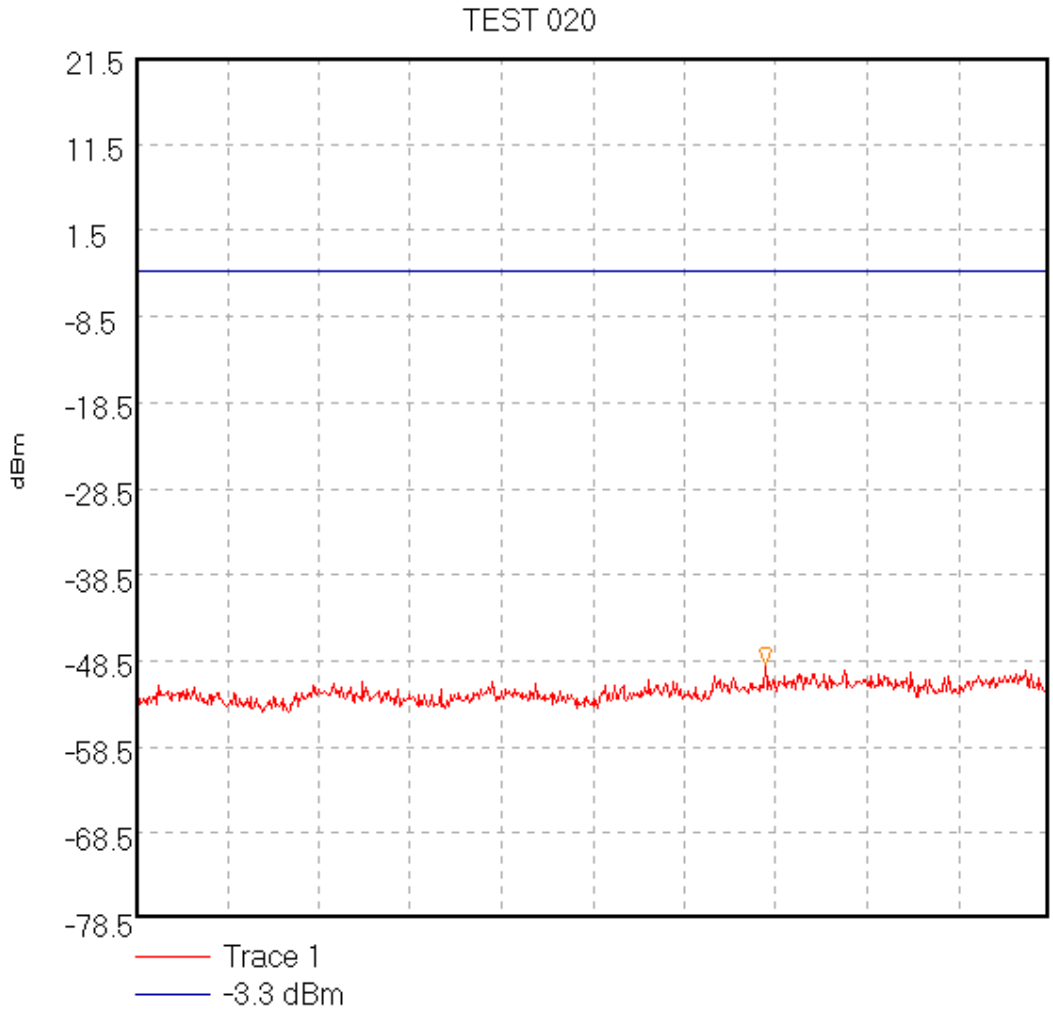
GPH\TEST\019
Transmitter Conducted Emissions CDP Handset - Top Channel
(10.0 GHz to 15.0 GHz)



Start 10.0 GHz; Stop 15.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.3 S
Peak 13.441667 GHz, -49.0 dBm
Display Line: -3.3 dBm;
13/12/02 15:09:03

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

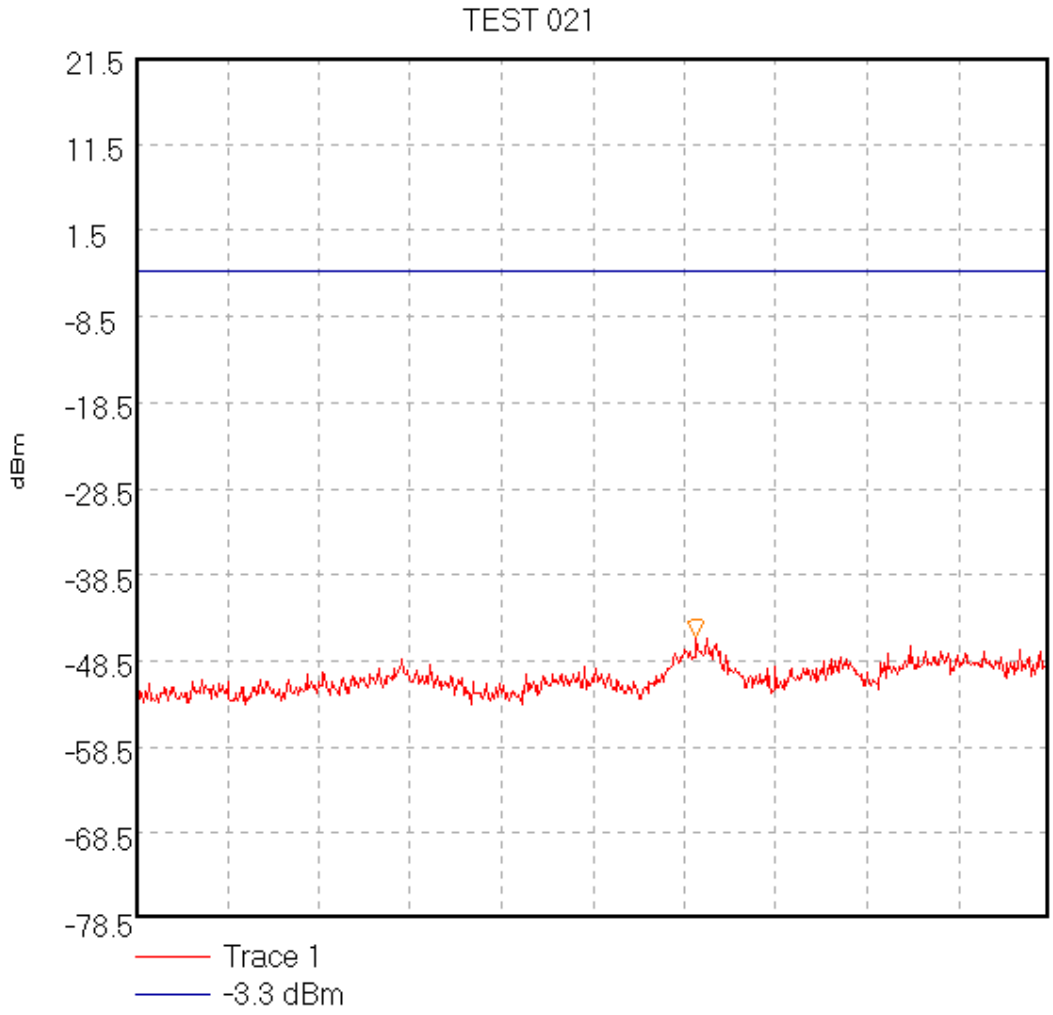
GPH\TEST\020
Transmitter Conducted Emissions CDP Handset - Top Channel
(15.0 GHz to 20.0 GHz)



Start 15.0 GHz; Stop 20.0 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.3 S
Peak 18.441667 GHz, -49.0 dBm
Display Line: -3.3 dBm;
13/12/02 15:12:13

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

GPH\TEST\021
Transmitter Conducted Emissions CDP Handset - Top Channel
(20.0 GHz to 26.5 GHz)

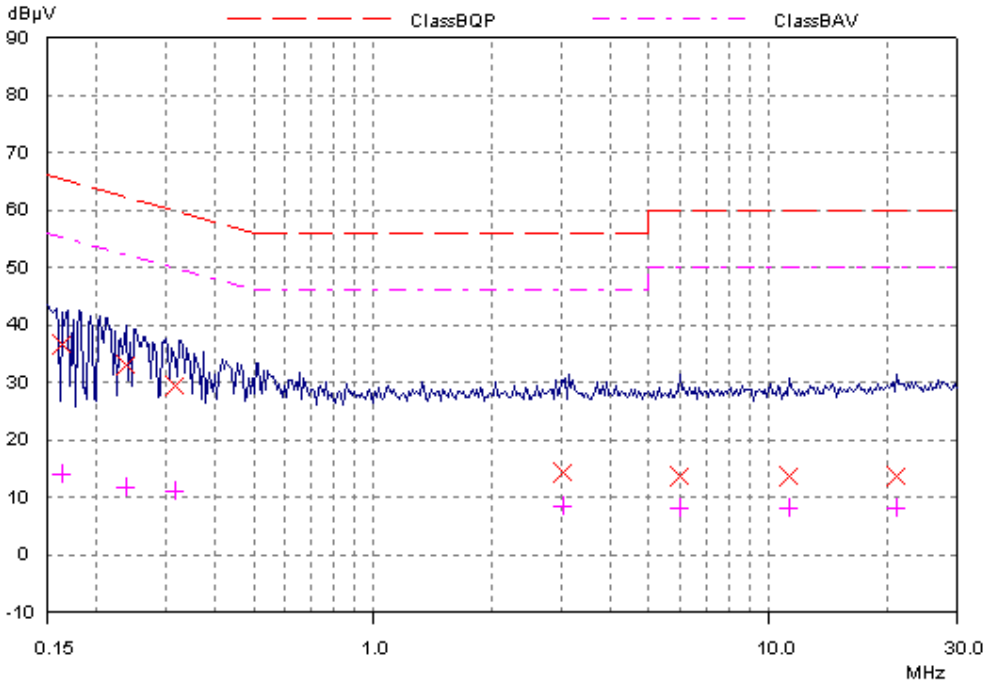


Start 20.0 GHz; Stop 26.5 GHz
Ref 21.5 dBm; Ref Offset 22.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 1.7 S
Peak 23.986667 GHz, -45.67 dBm
Display Line: -3.3 dBm;
13/12/02 15:12:44

Test Of: Mansella Ltd.
CDP Handset

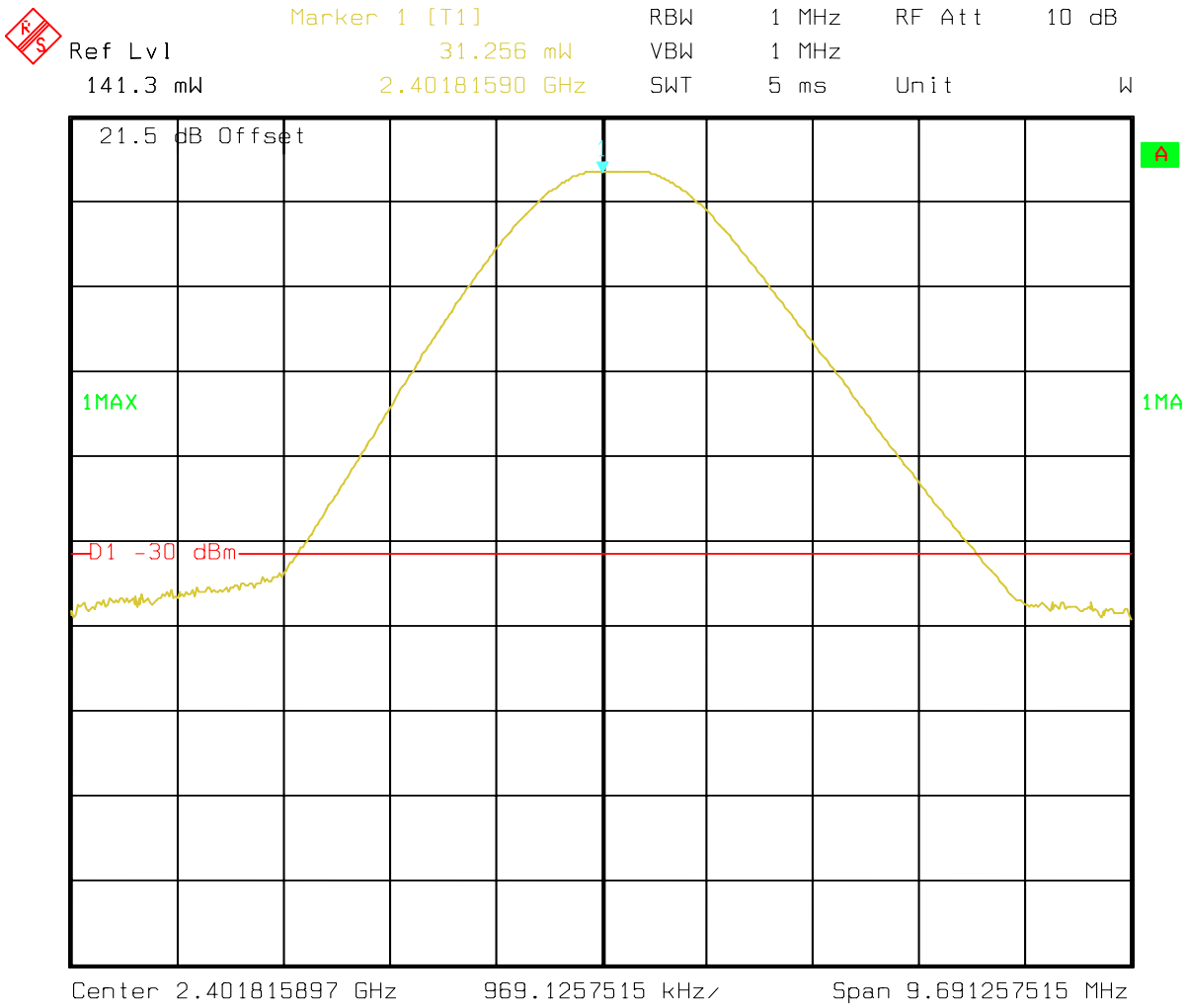
To: FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247

GPH\44309JD04\001A
AC Conducted Mains Emissions



Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

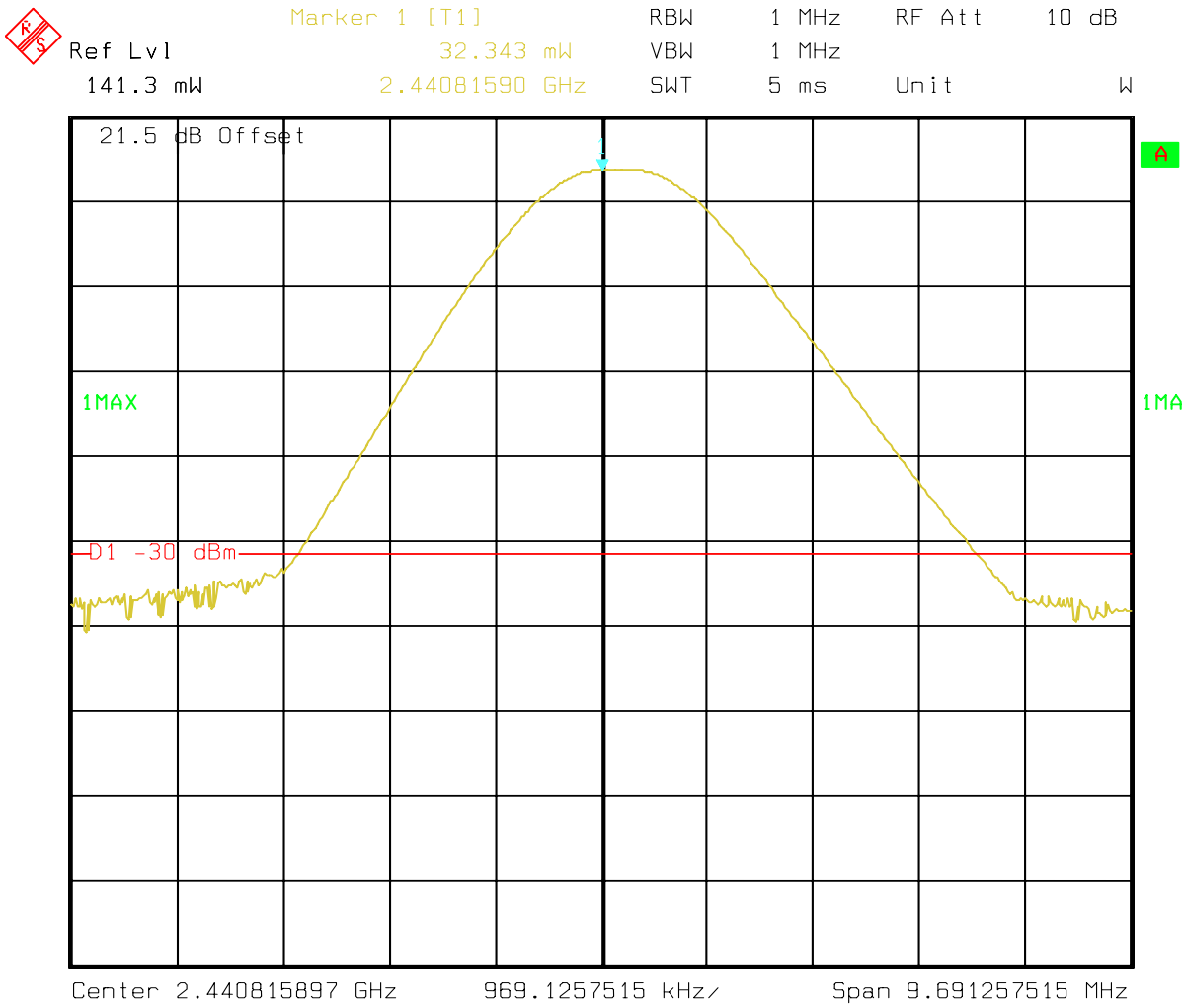
GPH\44309\CPBOT01
Conducted Carrier Power. Bottom Channel 3.25V



Comment A: Conducted Carrier Power, Bottom Channel 3.25V.
Tested for Mansella by RFI ltd. GPH/44309/CPBOT01
Date: 13.DEC.2002 11:49:09

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

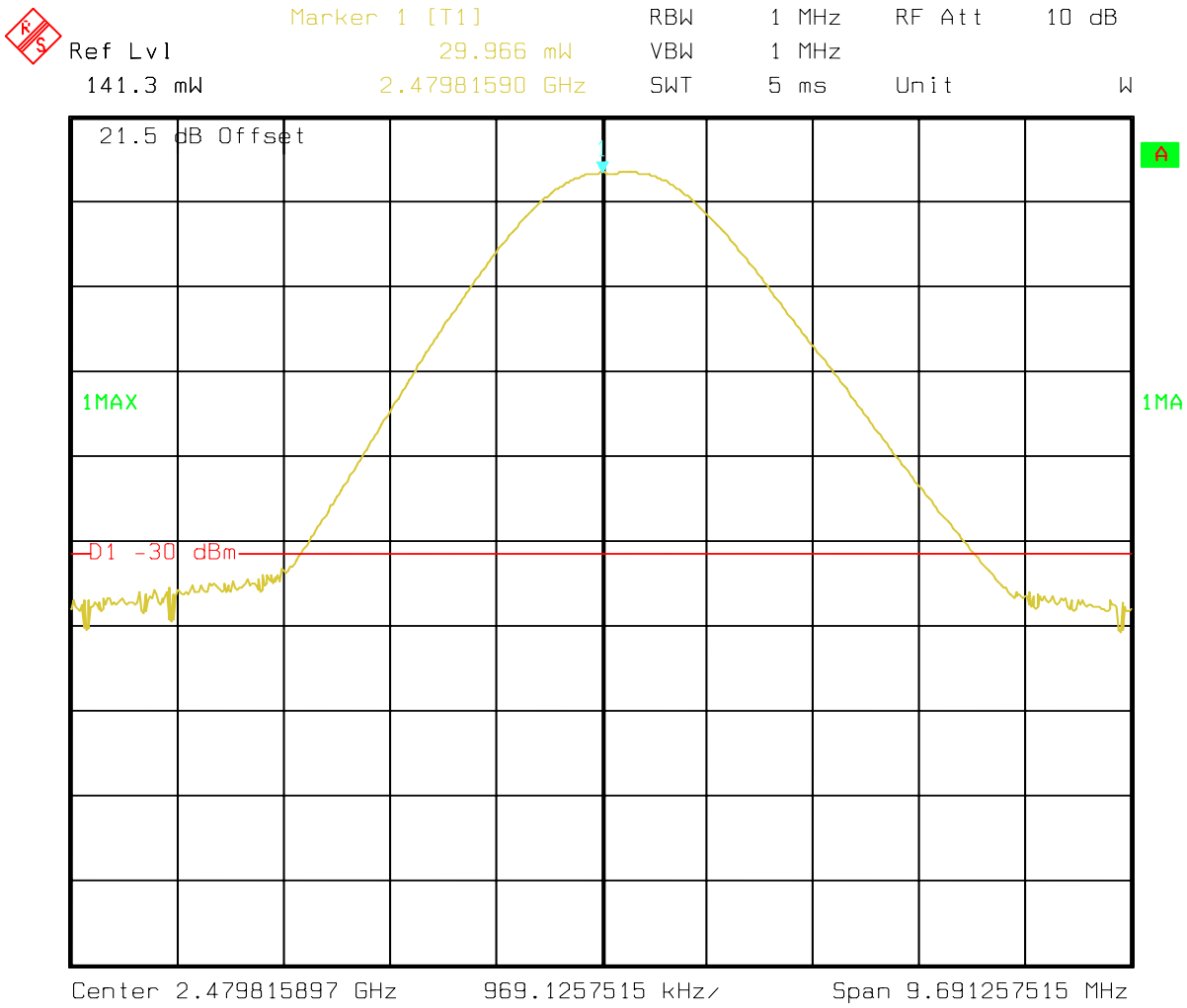
GPH\44309\CPBOT02
Conducted Carrier Power. Middle Channel 3.25V



Comment A: Conducted Carrier Power, Middle Channel 3.25V.
Tested for Mansella by RFI ltd. GPH/44309/CPBOT02
Date: 13.DEC.2002 11:50:48

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

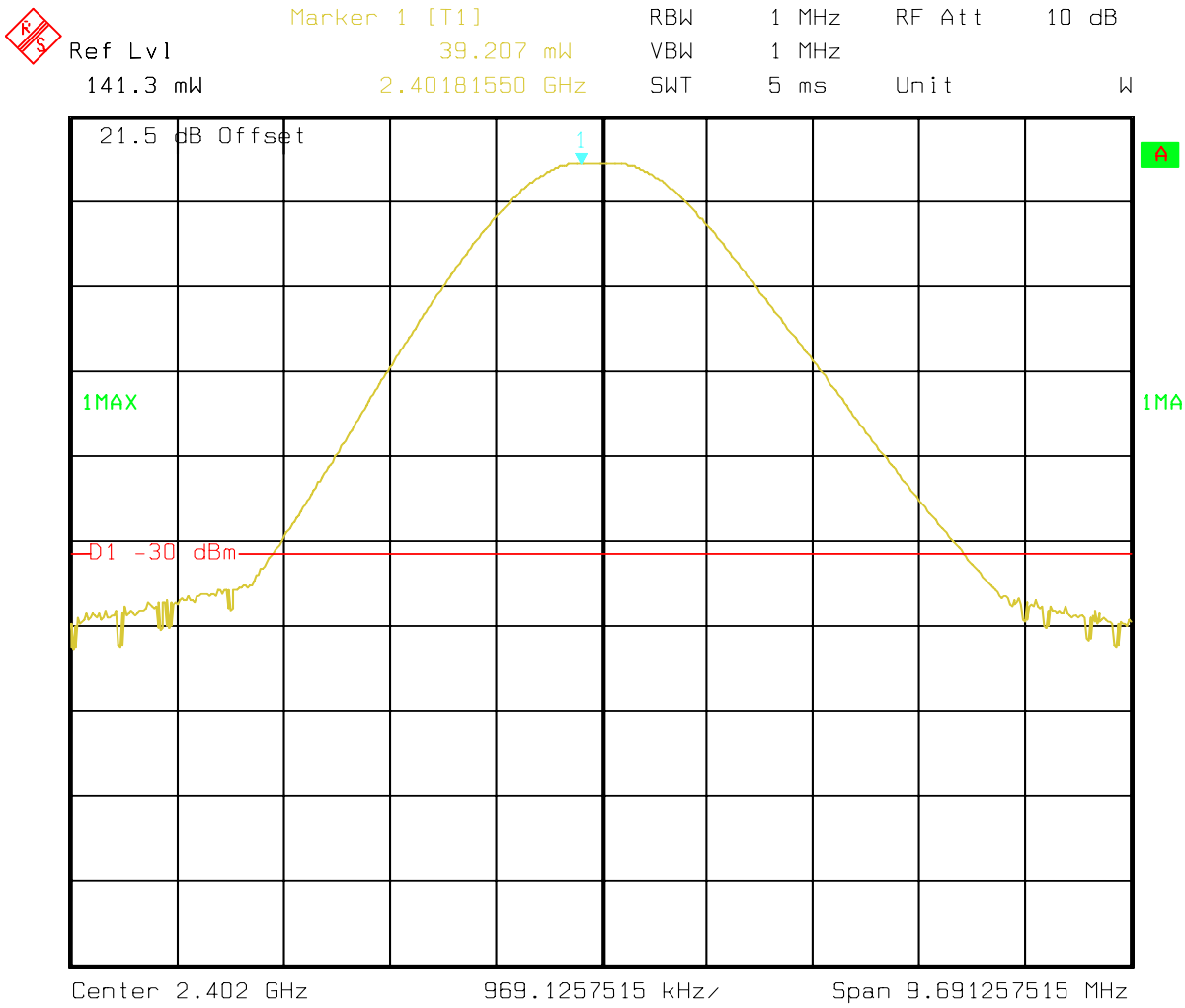
GPH\44309\CPBOT03
Conducted Carrier Power. Top Channel 3.25V



Comment A: Conducted Carrier Power, Top Channel 3.25V.
Tested for Mansella by RFI ltd. GPH/44309/CPBOT03
Date: 13.DEC.2002 11:51:48

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

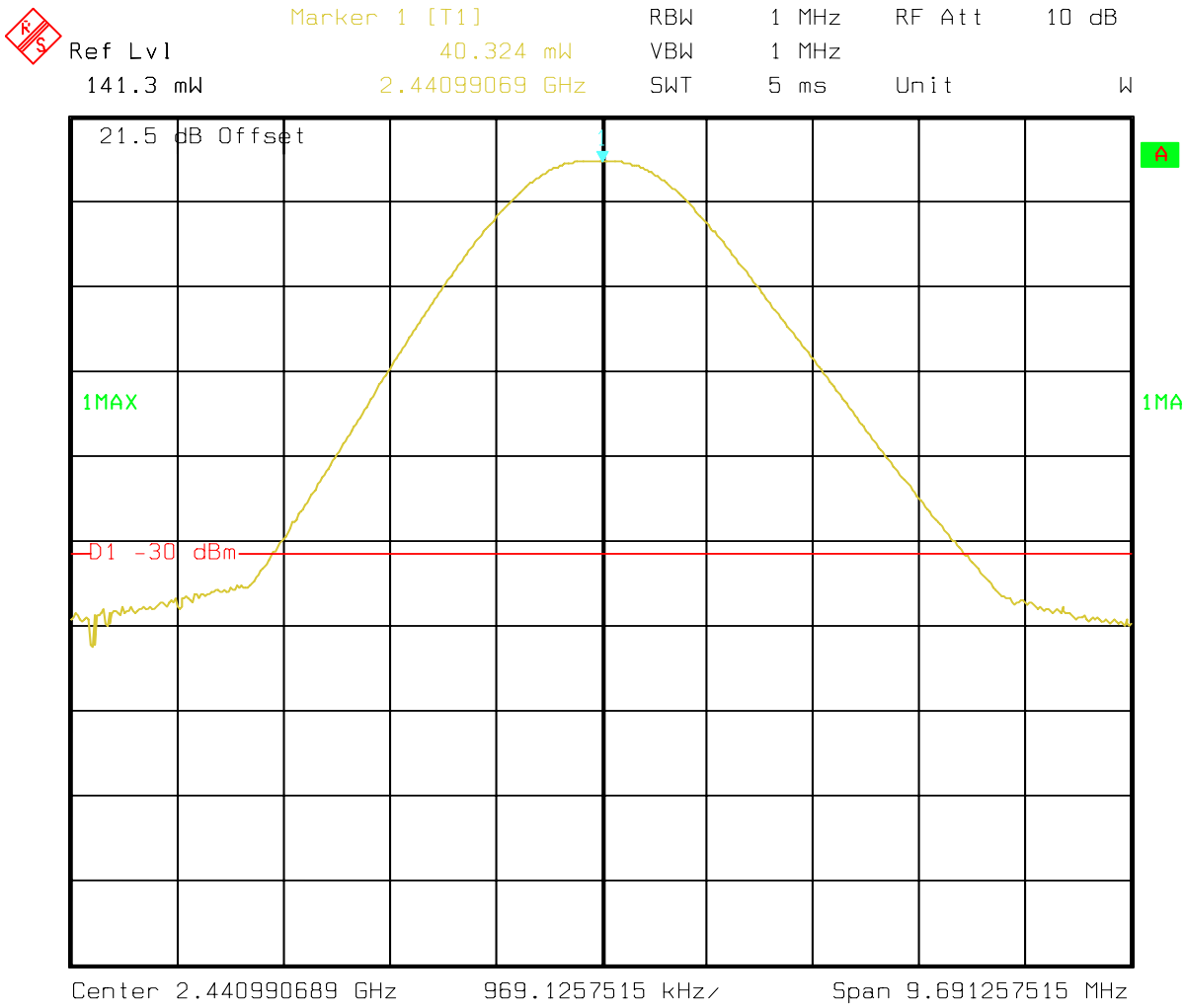
GPH\44309\CPBOT04
Conducted Carrier Power. Bottom Channel 4.2V



Comment A: Conducted Carrier Power, Bottom Channel 4.2V.
Tested for Mansella by RFI ltd. GPH/44309/CPBOT04
Date: 13.DEC.2002 11:55:27

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

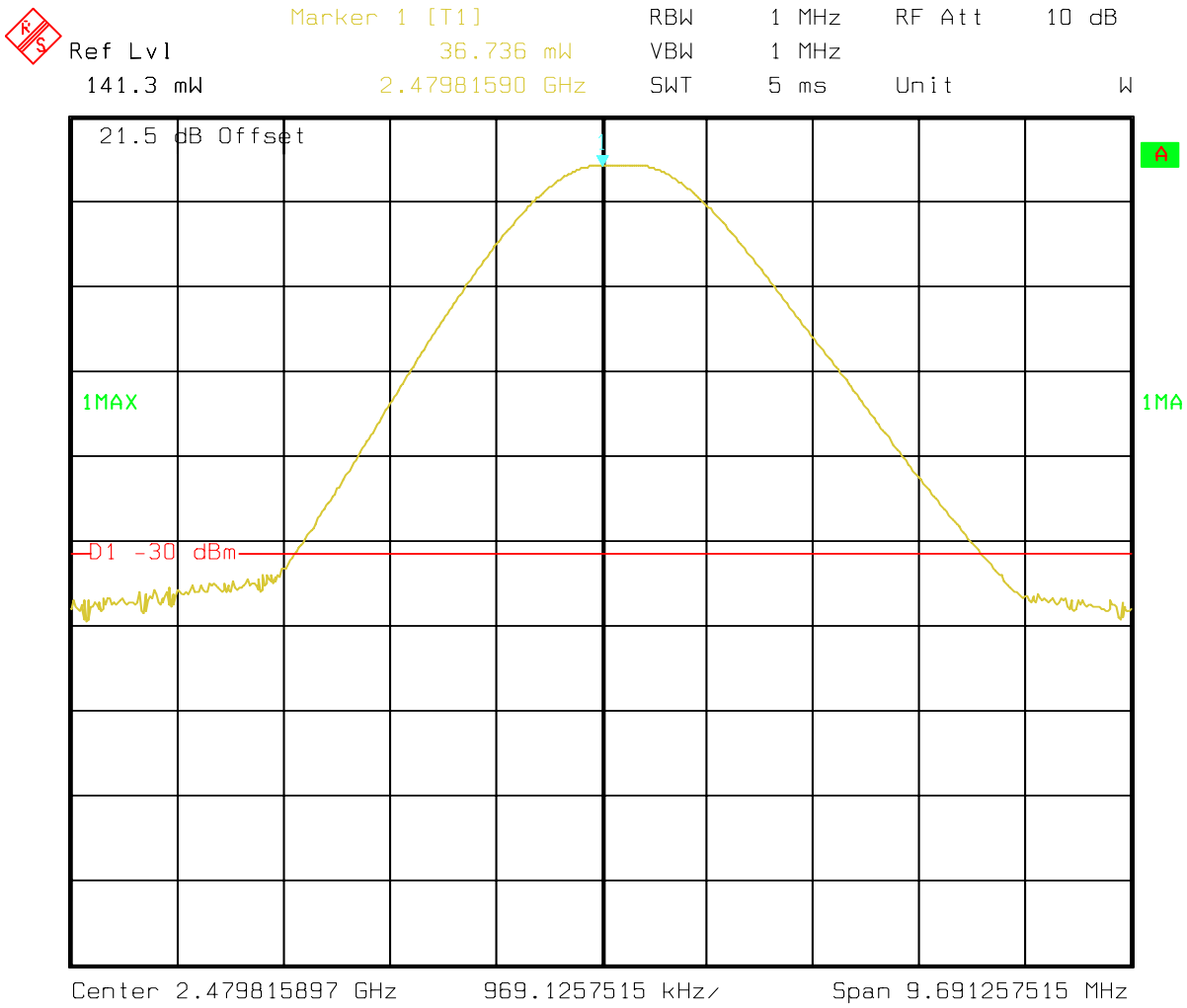
GPH\44309\CPBOT05
Conducted Carrier Power. Middle Channel 4.2V



Comment A: Conducted Carrier Power, Middle Channel 4.2V.
Tested for Mansella by RFI ltd. GPH/44309/CPBOT05
Date: 13.DEC.2002 11:54:24

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

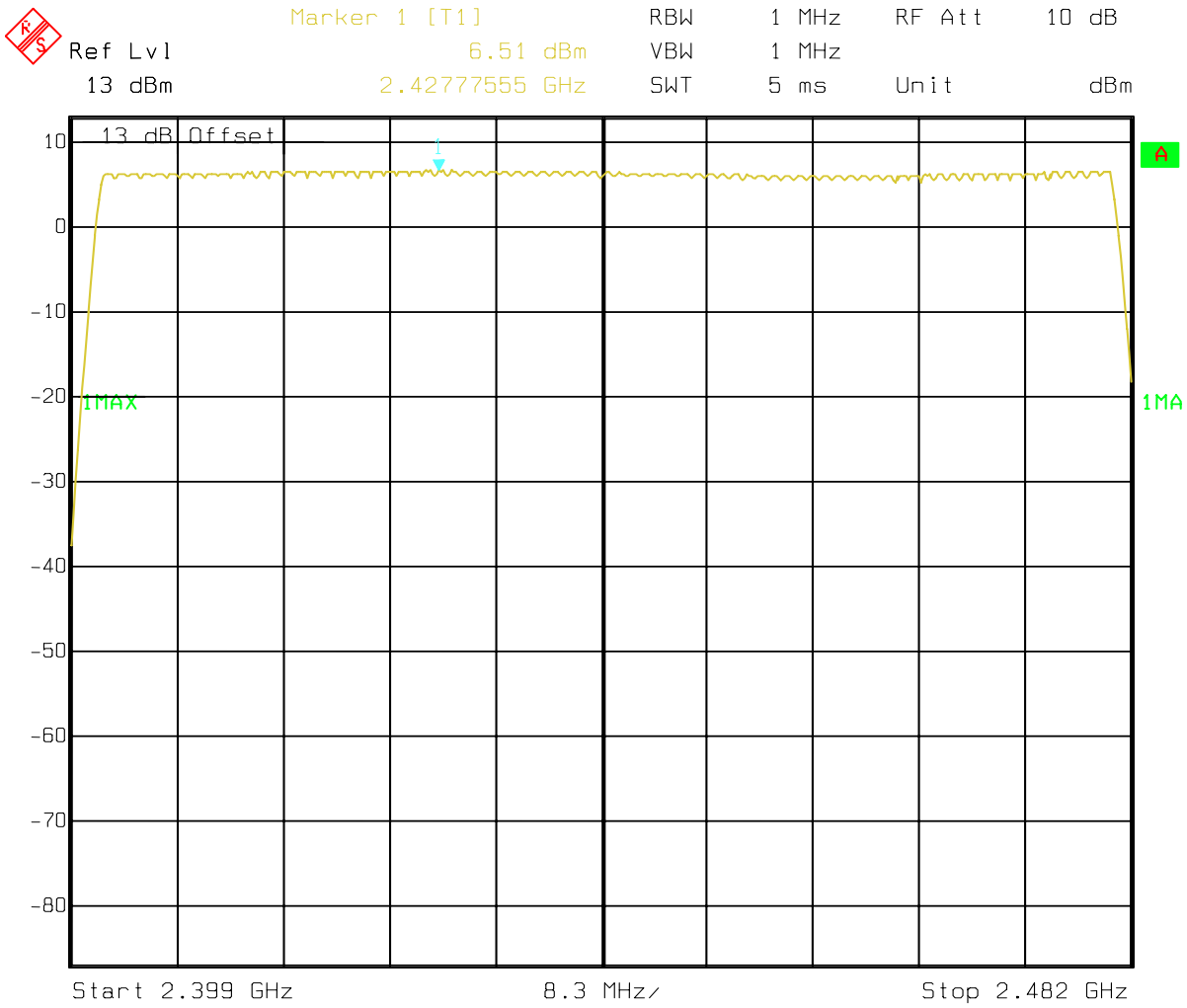
GPH\44309\CPBOT06
Conducted Carrier Power. Top Channel 4.2V



Comment A: Conducted Carrier Power, Top Channel 4.2V.
Tested for Mansella by RFI ltd. GPH/44309/CPBOT06
Date: 13.DEC.2002 11:53:05

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

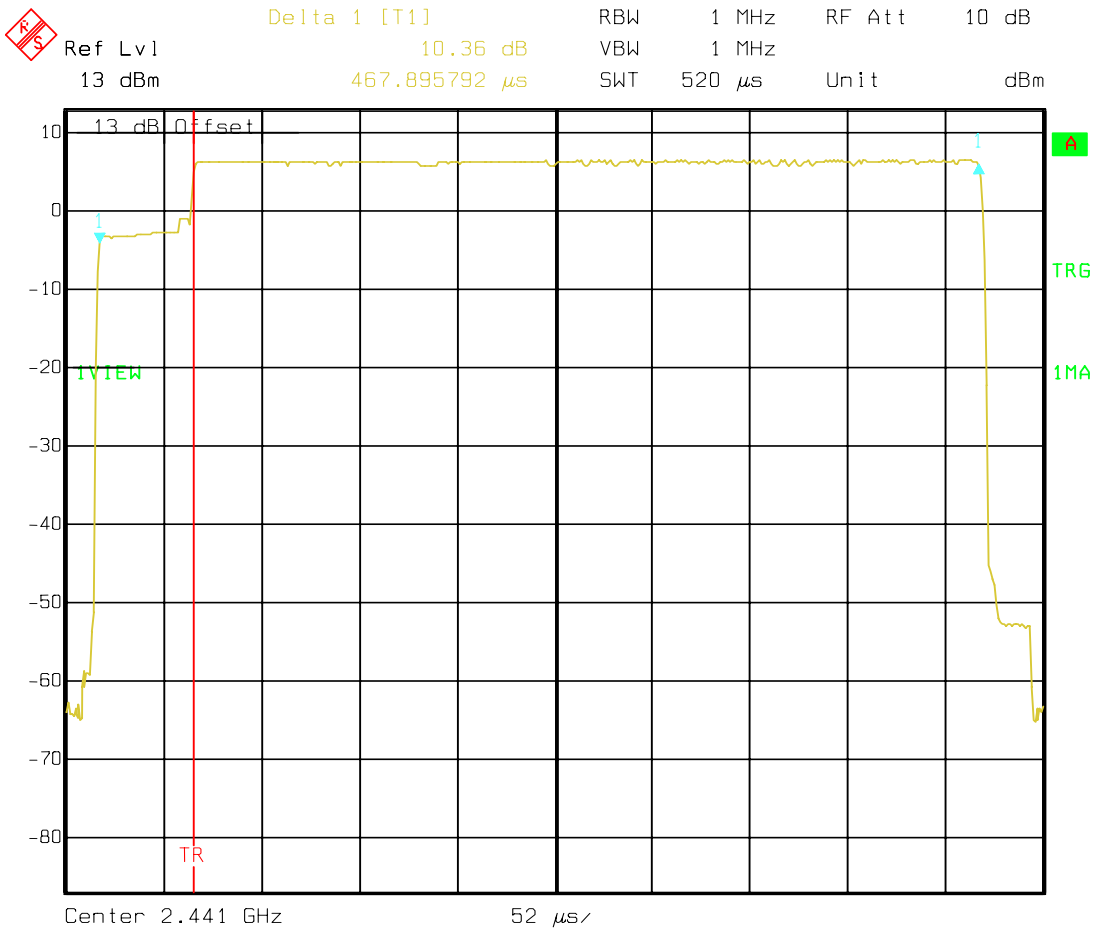
GPH\44309\NOHF01
Number of Hopping Frequencies



Comment A: Number of Hopping Frequencies. CDP Handset. FCC247(a).
Tested for Mansella by RFI ltd, GPH/44309/NOHF01
Date: 11.DEC.2002 12:00:36

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

GPH\44309\T0001
Time of Occupancy

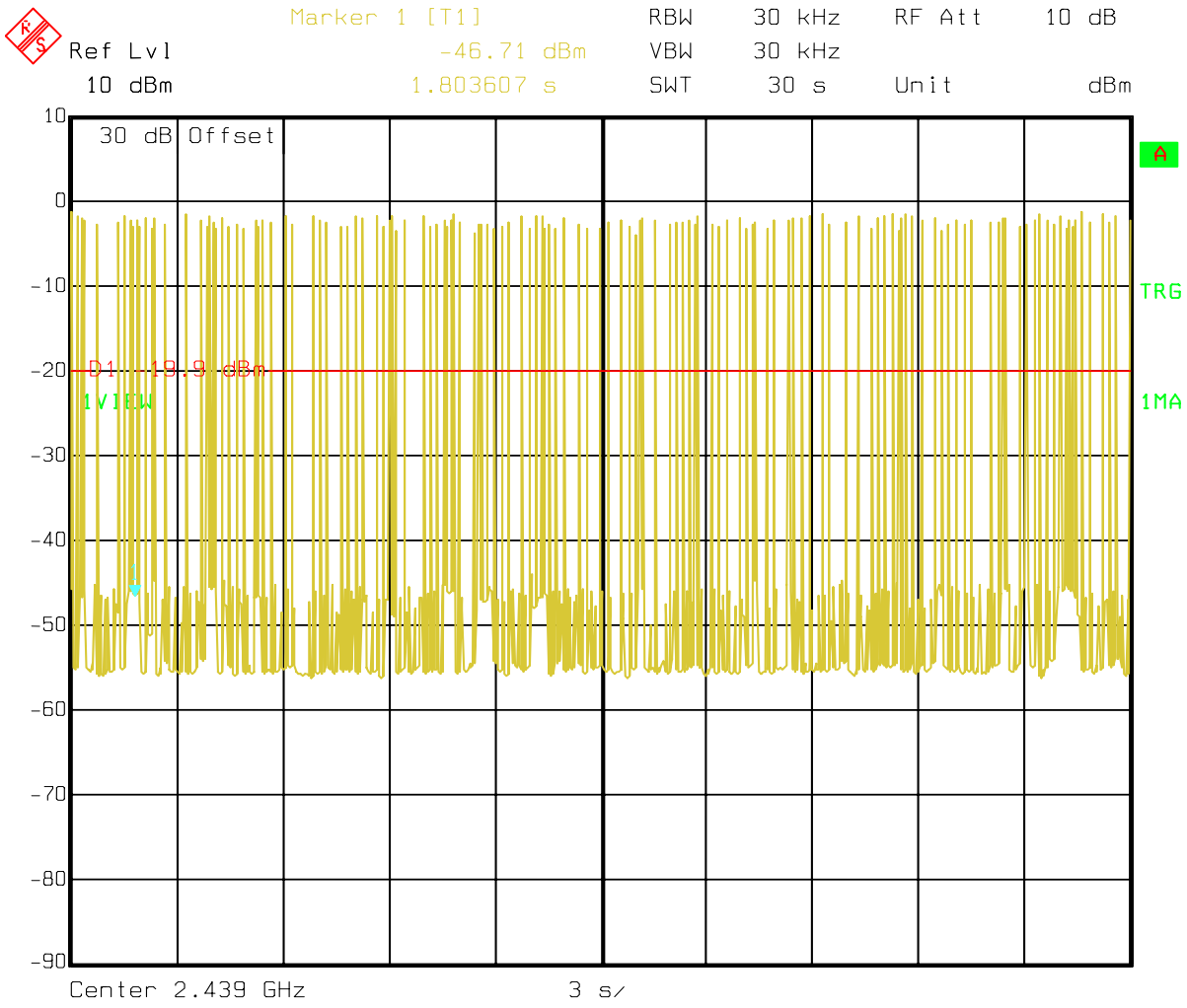


Comment A: Time of Occupancy. CDP Handset. FCC247(a).
Tested for Mansella by RFI ltd, GPH/44309/T0001
Date: 11.DEC.2002 11:46:10

Test Of: Mansella Ltd.
CDP Handset

To: FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247

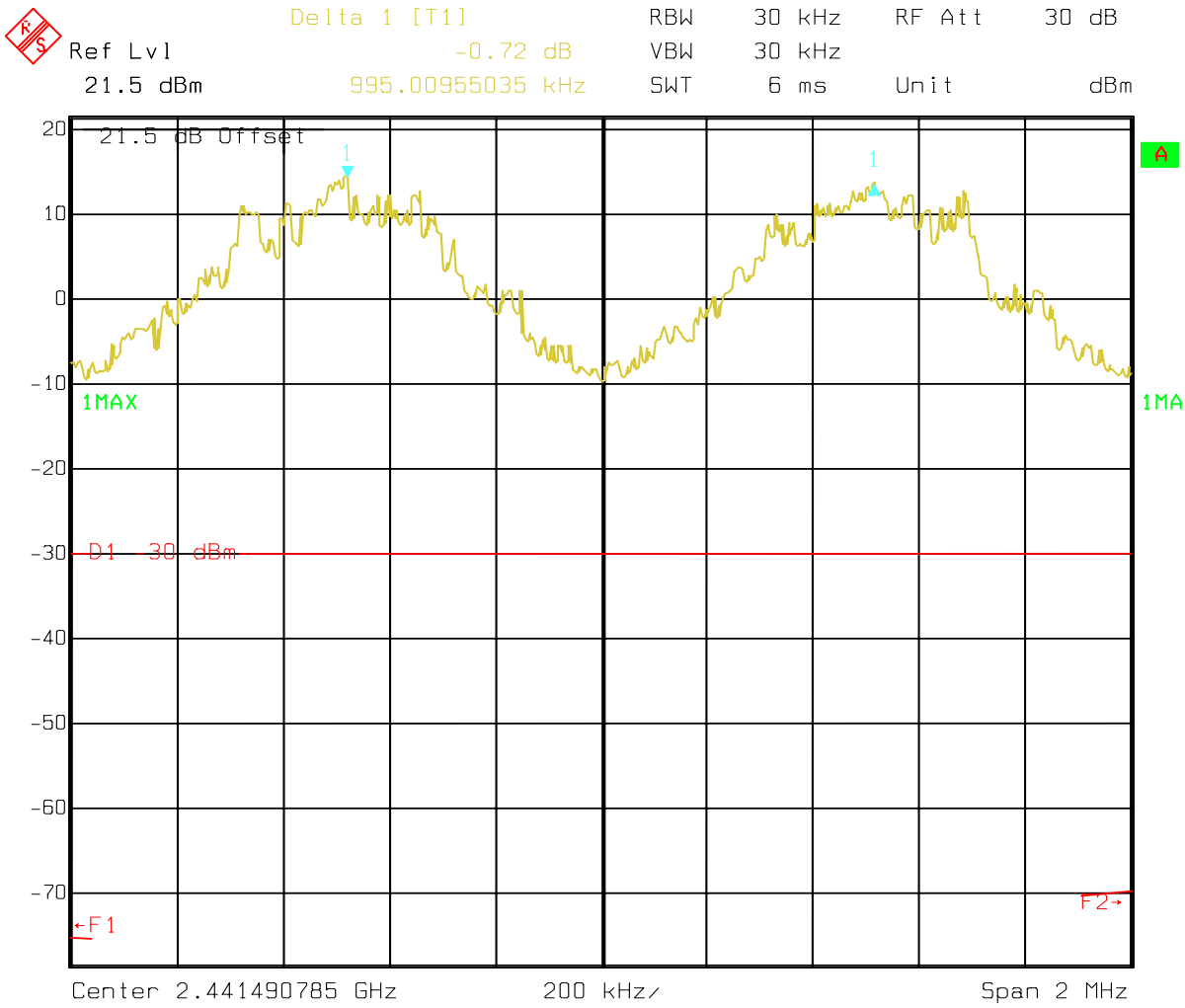
GPH\44309\NOT001
Number of transmissions in 30 seconds



Comment A: Number of transmissions in 30 seconds.
Tested for Mansella by RFI ltd. GPH/44309/NOT001
Date: 12.DEC.2002 10:05:15

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

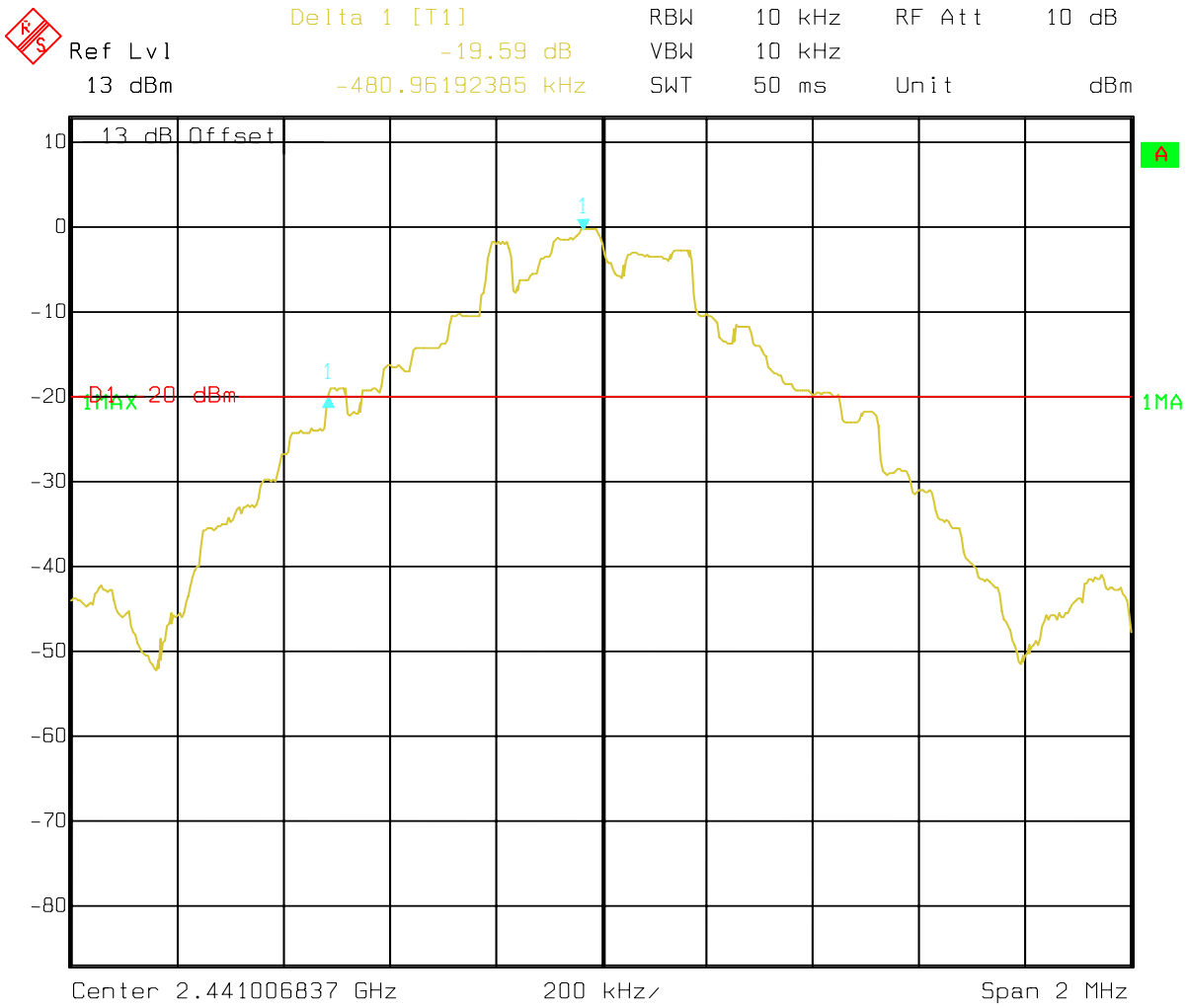
GPH\44309\CFS01
Carrier Frequency Separation



Comment A: Carrier Frequency Seperation. CDP Handset. FCC247(a).
Tested for Mansella by RFI ltd, GPH/44309/CFS01
Date: 11.DEC.2002 10:51:38

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

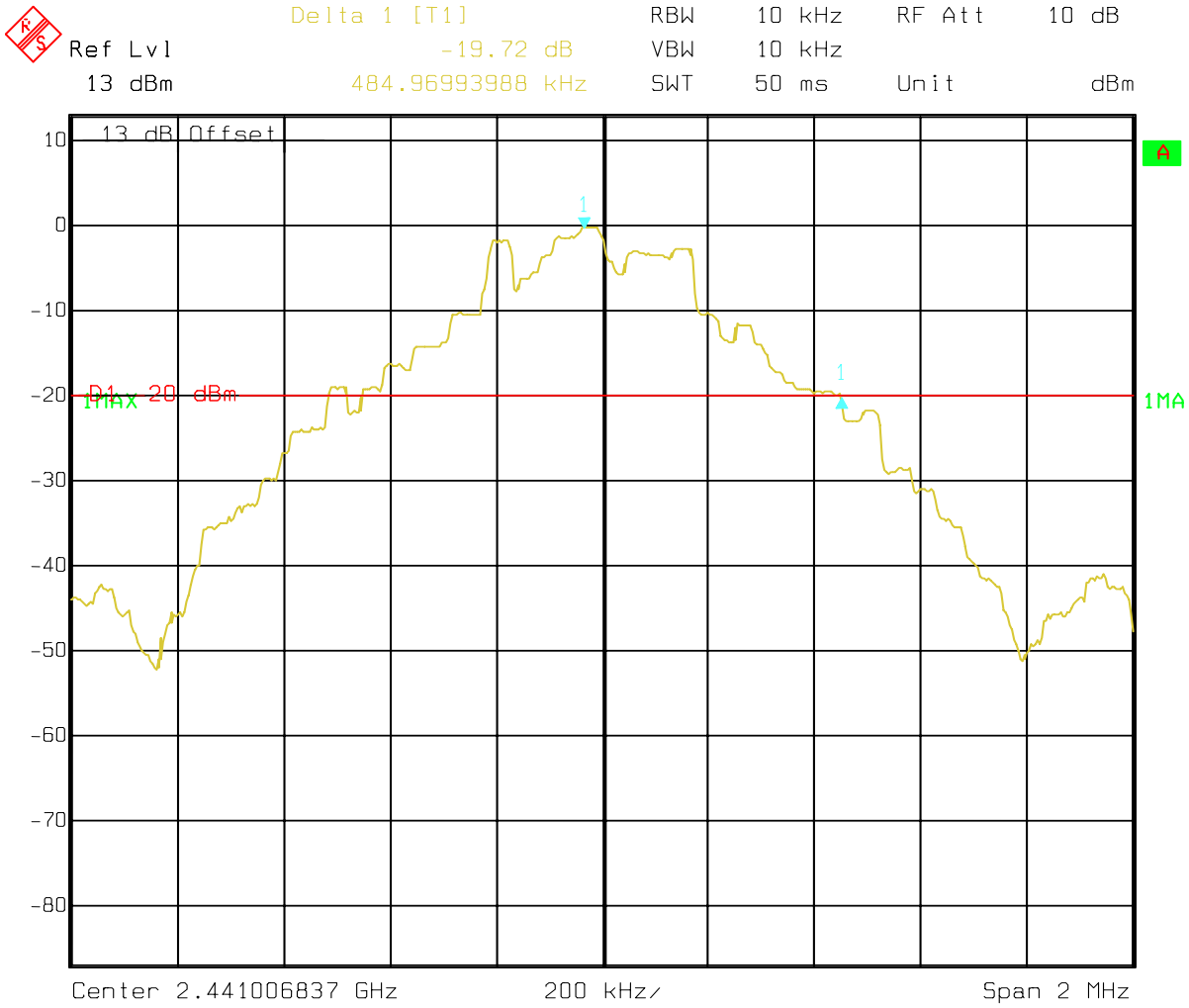
GPH\44309\20DBBW01
20 dB Bandwidth FL Delta



Comment A: 20dB Bandwidth FL Delta. CDP Handset. FCC247(a).
Tested for Mansella by RFI ltd, GPH/44309/20DBBW02
Date: 11.DEC.2002 11:36:02

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

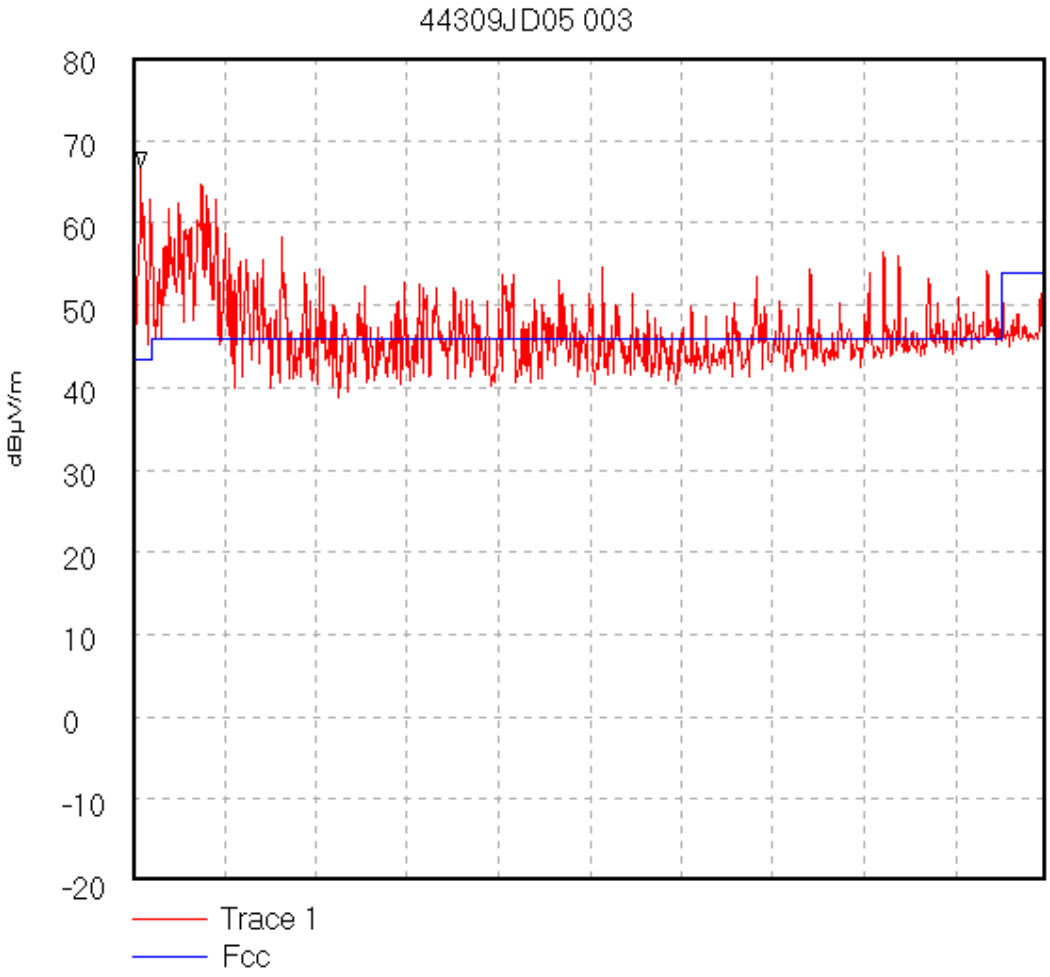
GPH\44309\20DBBW02
20 dB Bandwidth FH Delta



Comment A: 20dB Bandwidth FL Delta. CDP Handset. FCC247(a).
Tested for Mansella by RFI ltd, GPH/44309/20DBBW02
Date: 11.DEC.2002 11:36:29

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

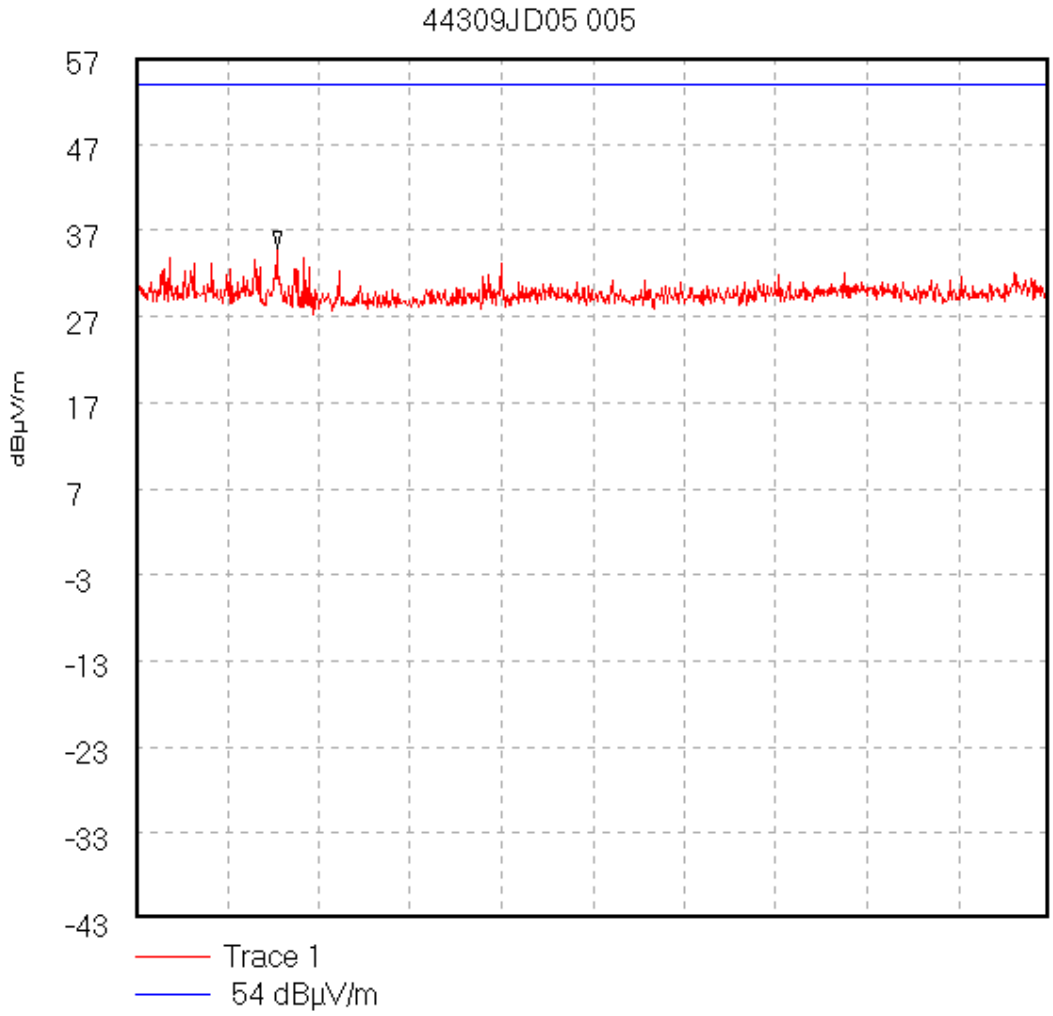
GPH\44309JD05\003
Receiver Radiated Spurious Emissions
(200.0 MHz to 1.0 GHz)



Start 200.0 MHz; Stop 1.0 GHz
Ref 80 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 119.818 kHz; VBW 300.0 kHz; Att 10 dB; Swp 200.0 mS
Peak 207.111 MHz, 66.67 dBµV/m
Limit/Mask: Fcc;
Transducer Factors: Radio_Log_Spiral
04/01/80 11:15:23

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

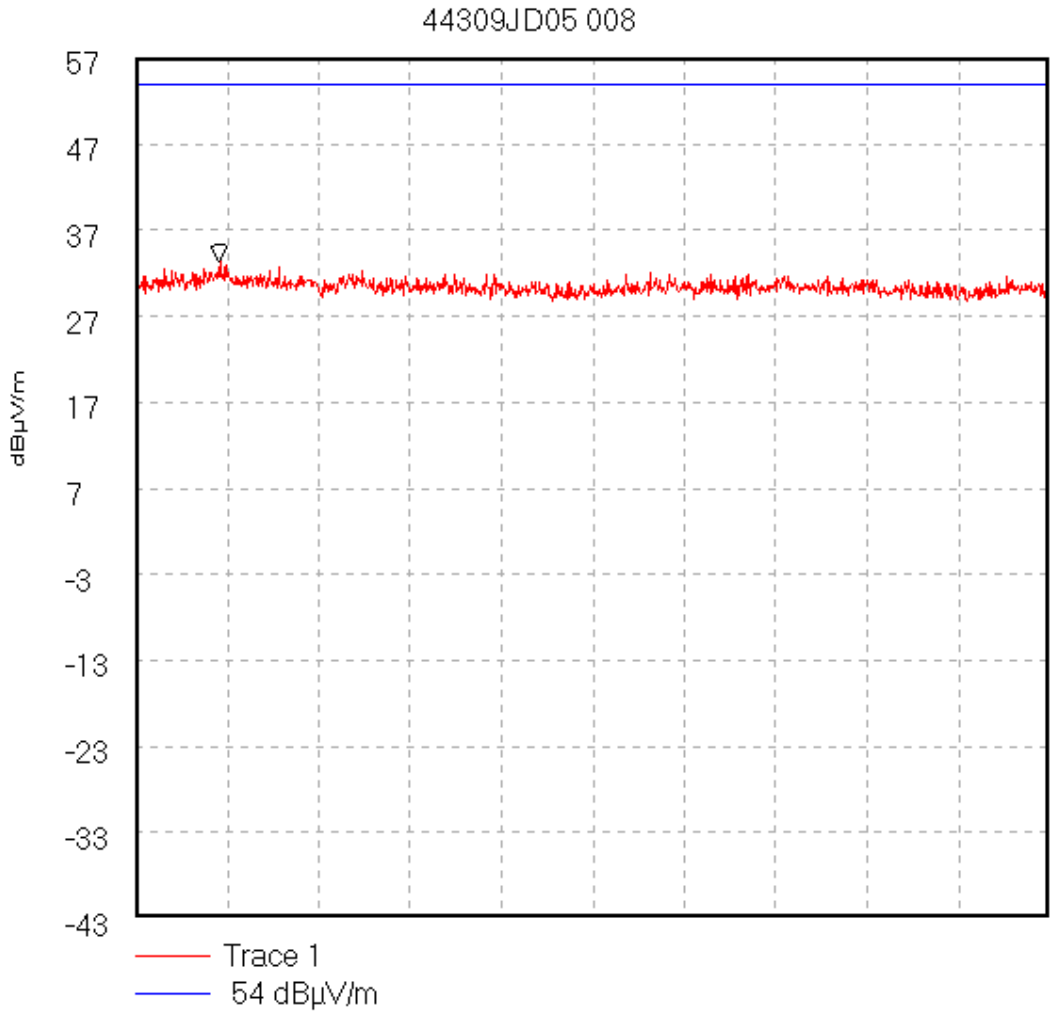
GPH\44309JD05\005
Receiver Radiated Spurious Emissions
(1.0 GHz to 2.0 GHz)



Start 1.0 GHz; Stop 2.0 GHz
Ref 57 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 20.0 mS
Peak 1.154 GHz, 34.79 dBµV/m
Display Line: 54 dBµV/m;
04/01/80 11:32:18

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

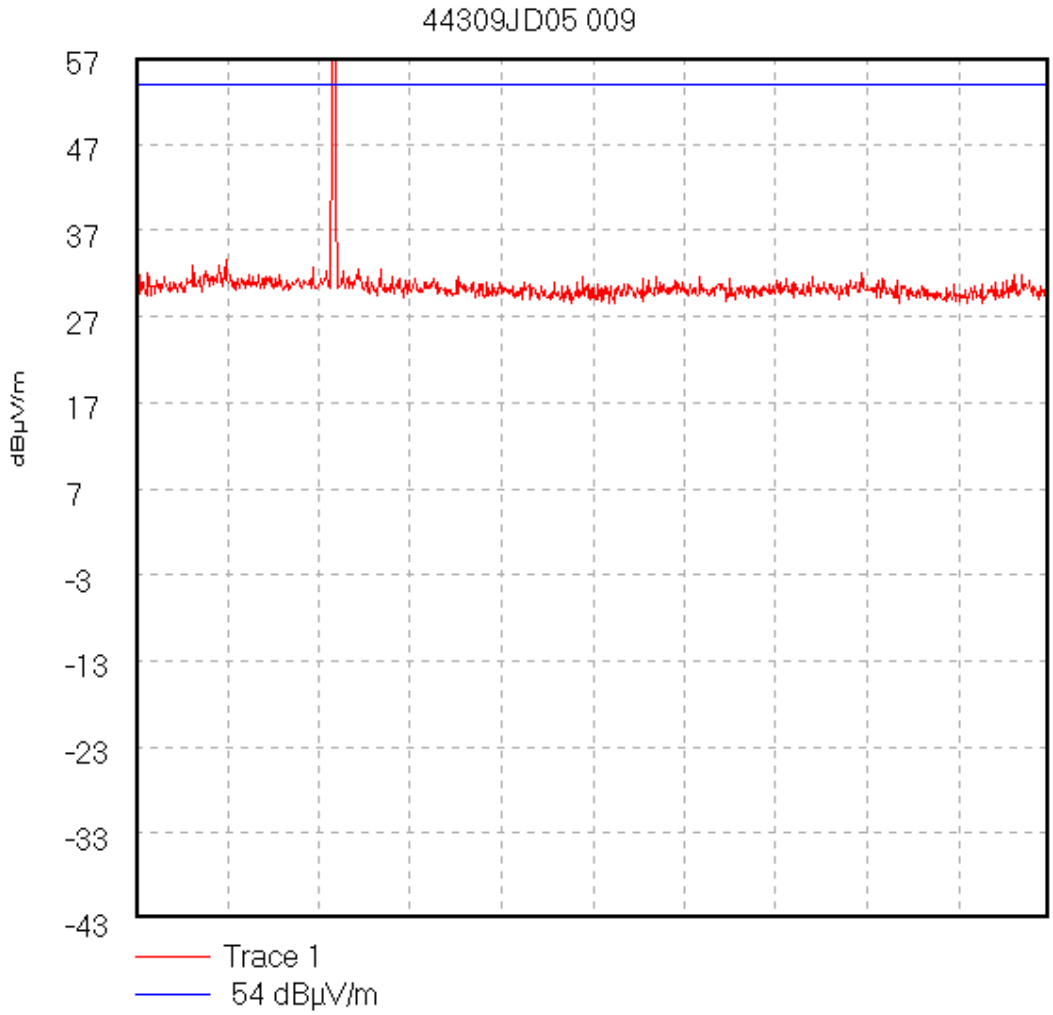
GPH\44309JD05\008
Receiver Radiated Spurious Emissions
(2.0 GHz to 4.0 GHz)



Start 2.0 GHz; Stop 4.0 GHz
Ref 57 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 20.0 mS
Peak 2.184 GHz, 33.29 dBµV/m
Display Line: 54 dBµV/m;
04/01/80 11:37:39

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

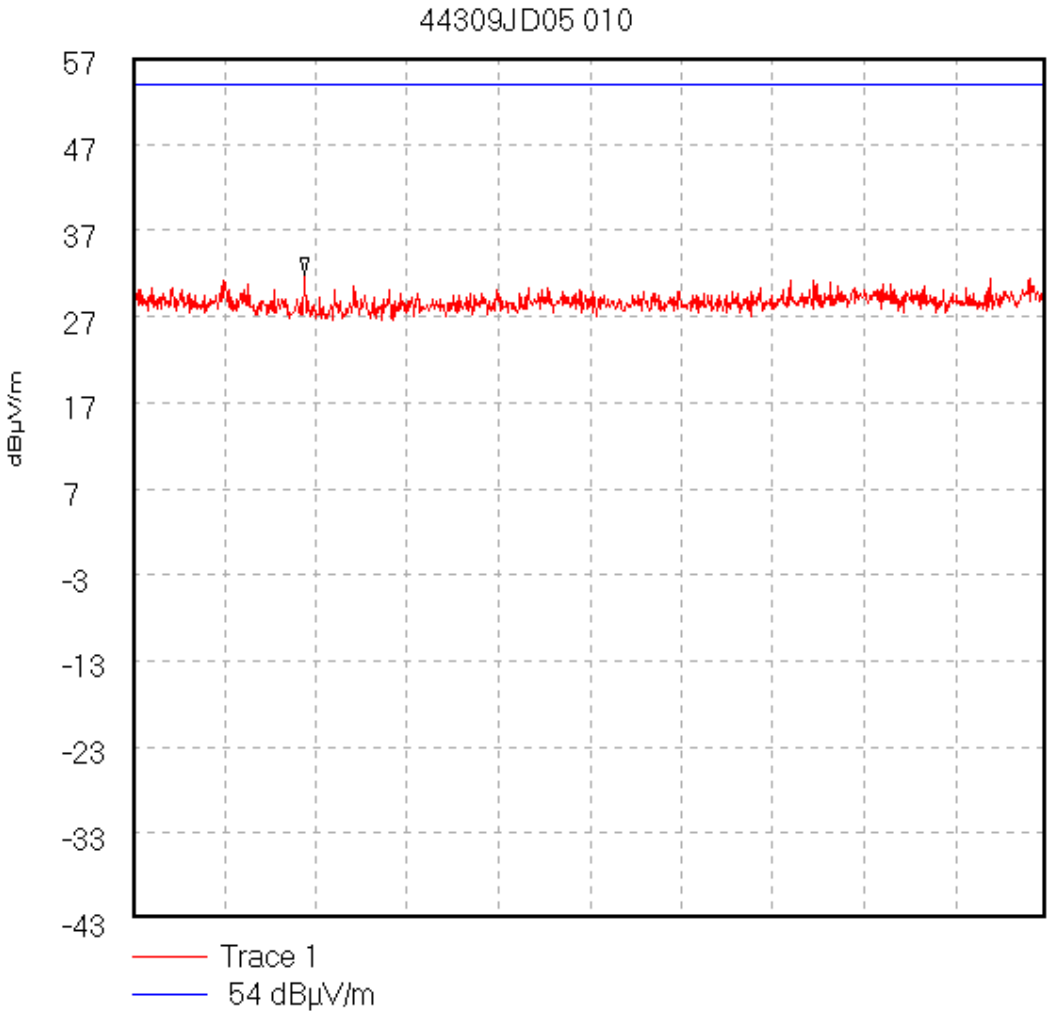
GPH\44309JD05\009
Transmitter Radiated Spurious Emissions
(2.0 GHz to 4.0 GHz)



Start 2.0 GHz; Stop 4.0 GHz
Ref 57 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 20.0 mS
Peak 2.431 GHz, 60.98 dBµV/m
Display Line: 54 dBµV/m;
04/01/80 13:12:43

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

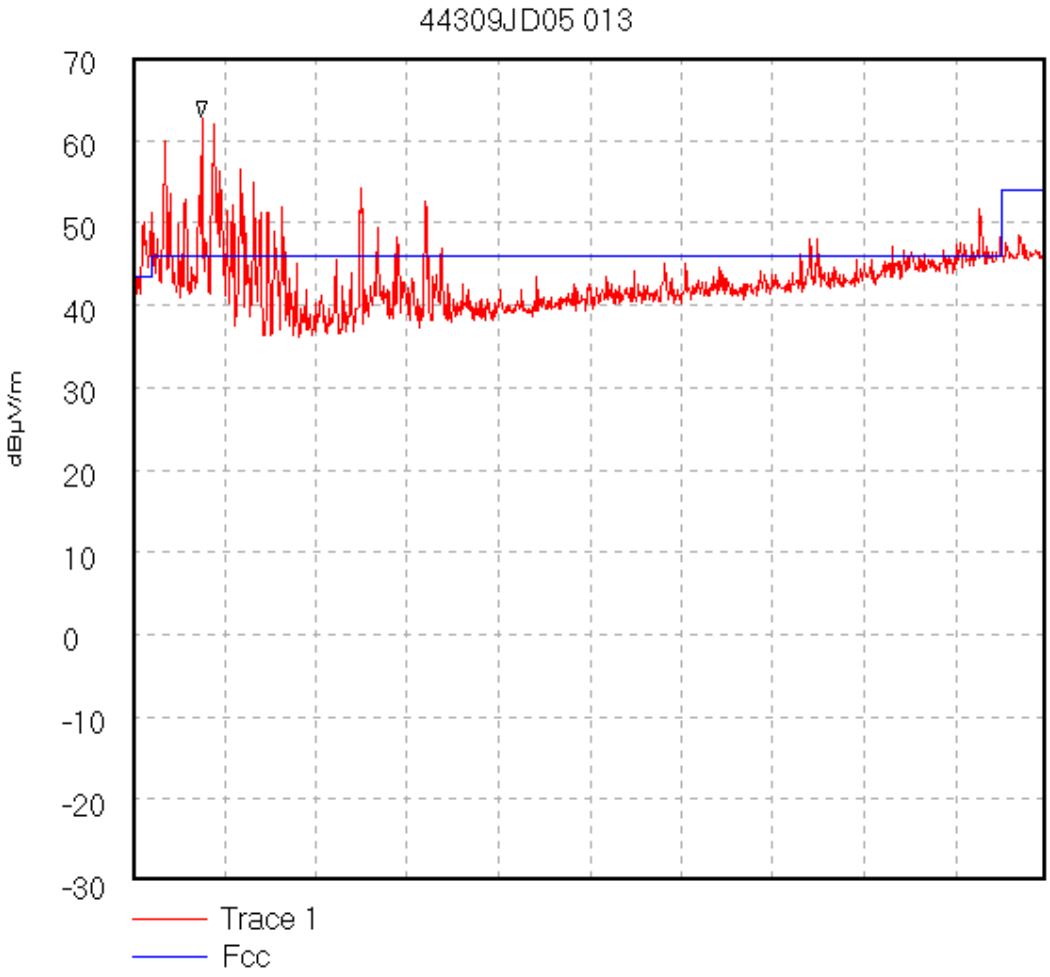
GPH\44309JD05\010
Transmitter Radiated Spurious Emissions
(1.0 GHz to 2.0 GHz)



Start 1.0 GHz; Stop 2.0 GHz
Ref 57 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 20.0 mS
Peak 1.188 GHz, 31.71 dBµV/m
Display Line: 54 dBµV/m;
04/01/80 13:14:39

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

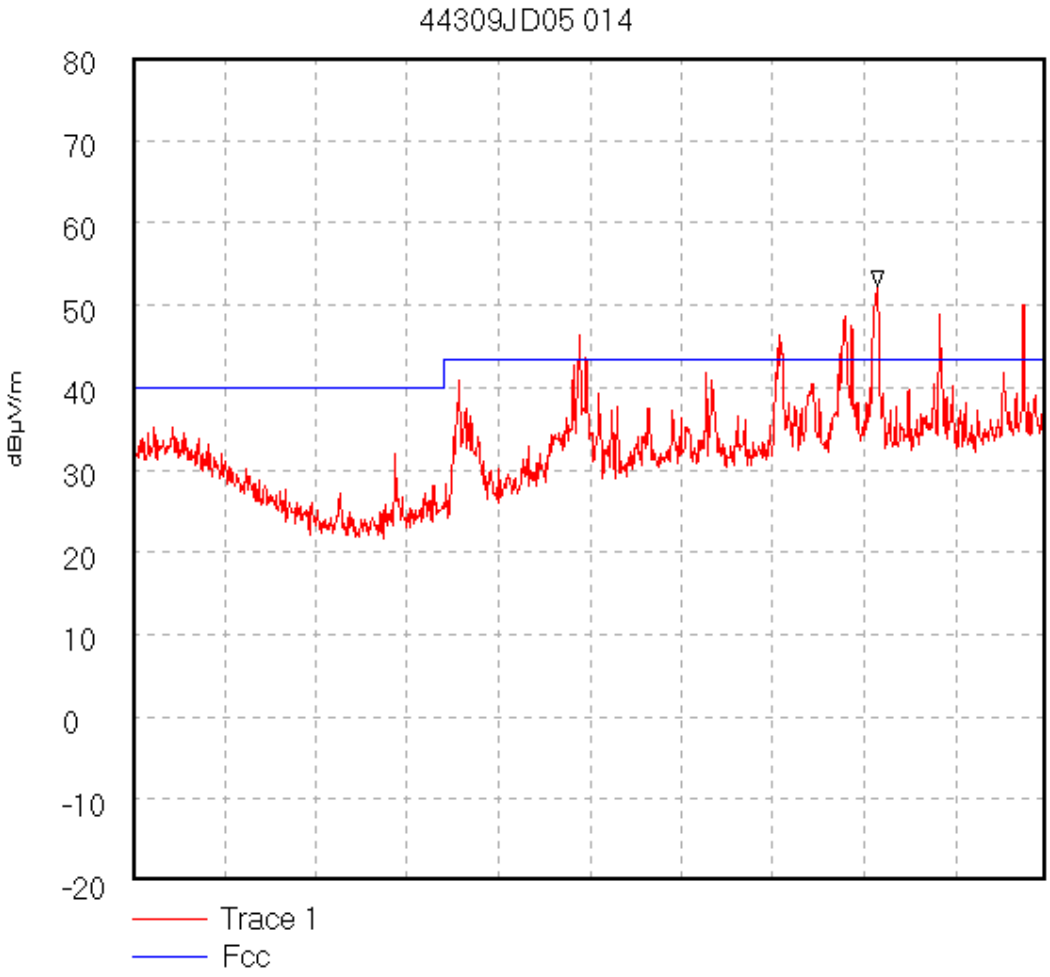
GPH\44309JD05\013
Transmitter Radiated Spurious Emissions
(200.0 MHz to 1.0 GHz)



Start 200.0 MHz; Stop 1.0 GHz
Ref 70 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 119.818 kHz; VBW 300.0 kHz; Att 10 dB; Swp 200.0 mS
Peak 260.444 MHz, 62.77 dBµV/m
Limit/Mask: Fcc;
Transducer Factors: Radio_Log_Spiral
04/01/80 13:36:38

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

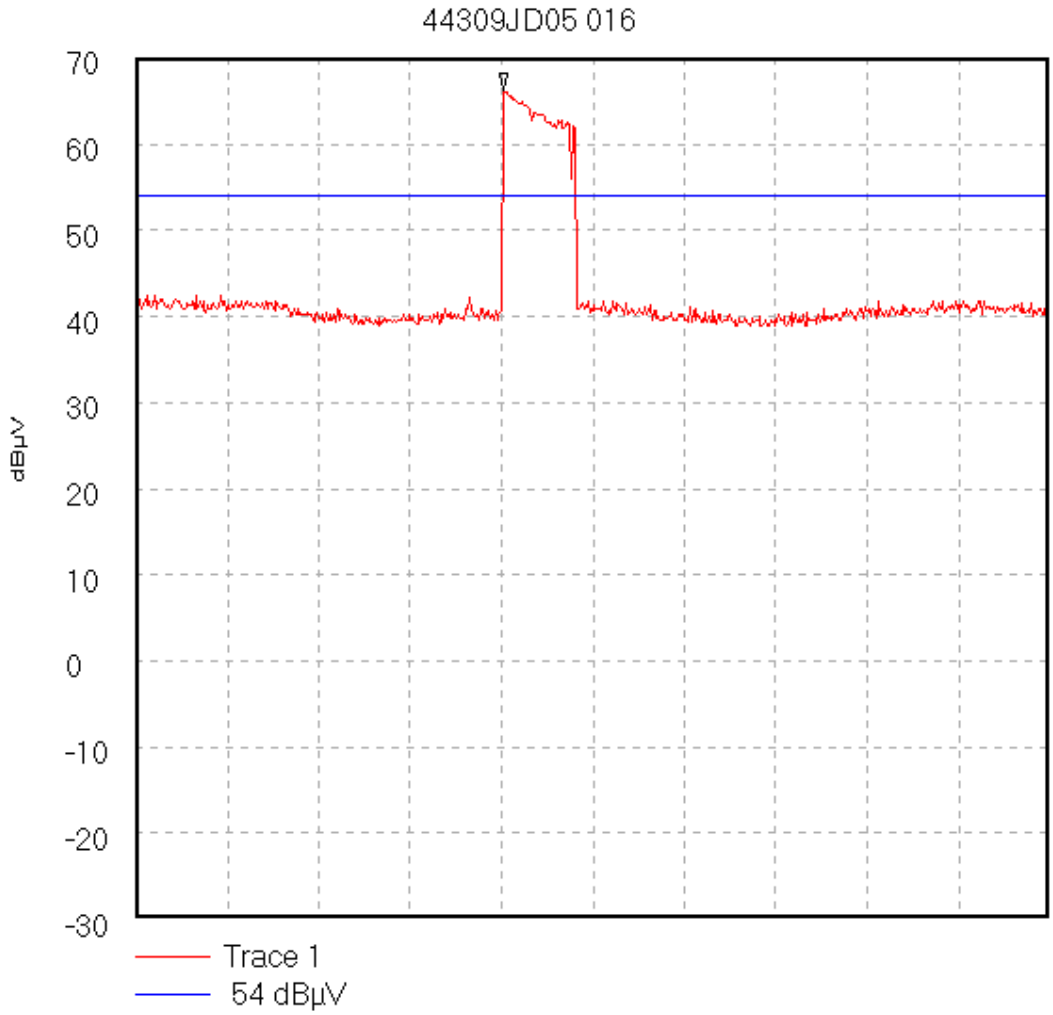
GPH\44309JD05\014
Transmitter Radiated Spurious Emissions
(30.0 MHz to 200.0 MHz)



Start 30.0 MHz; Stop 200.0 MHz
Ref 80 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 123.411 kHz; VBW 300.0 kHz; Att 10 dB; Swp 60.0 mS
Peak 168.456 MHz, 52.15 dBµV/m
Limit/Mask: Fcc;
Transducer Factors: Radio_Bicon
04/01/80 14:11:56

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

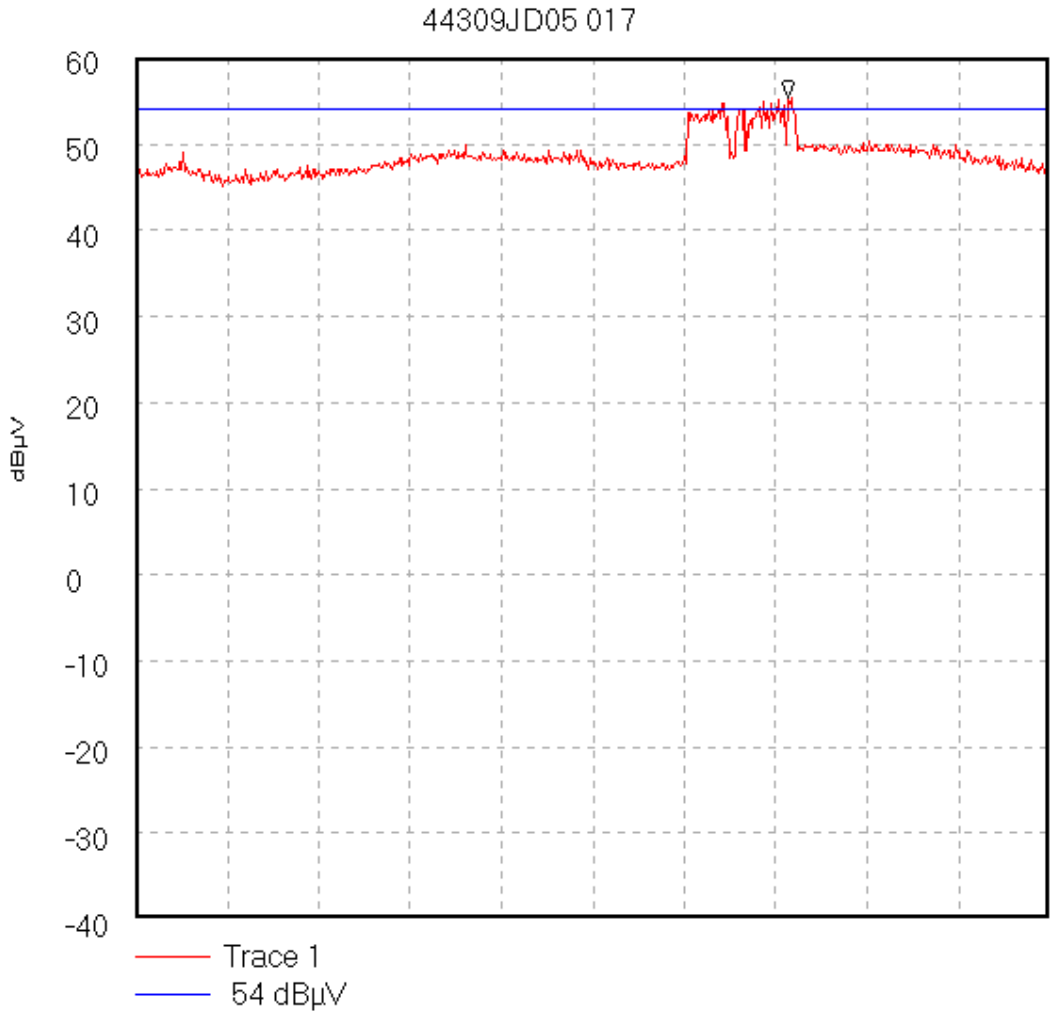
GPH\44309JD05\016
Transmitter Radiated Spurious Emissions
(4.0 GHz to 6.0 GHz)



Start 4.0 GHz; Stop 6.0 GHz
Ref 70 dBµV; Ref Offset 15.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 0 dB; Swp 50.0 mS
Peak 4.803333 GHz, 66.17 dBµV
Display Line: 54 dBµV;
17/12/02 11:36:13

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

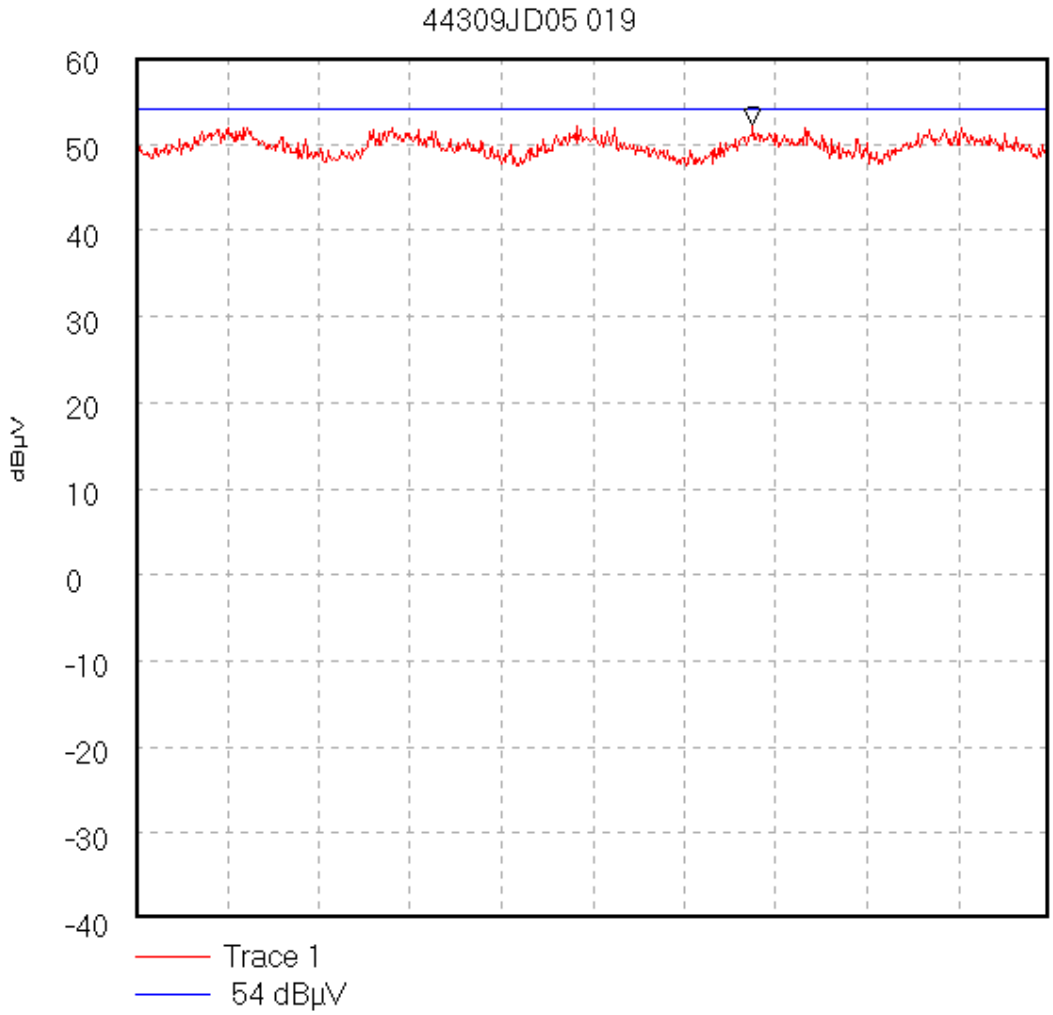
GPH\44309JD05\017
Transmitter Radiated Spurious Emissions
(6.0 GHz to 8.0 GHz)



Start 6.0 GHz; Stop 8.0 GHz
Ref 60 dBµV; Ref Offset 17.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 0 dB; Swp 50.0 mS
Peak 7.426667 GHz, 55.33 dBµV
Display Line: 54 dBµV;
17/12/02 13:52:31

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

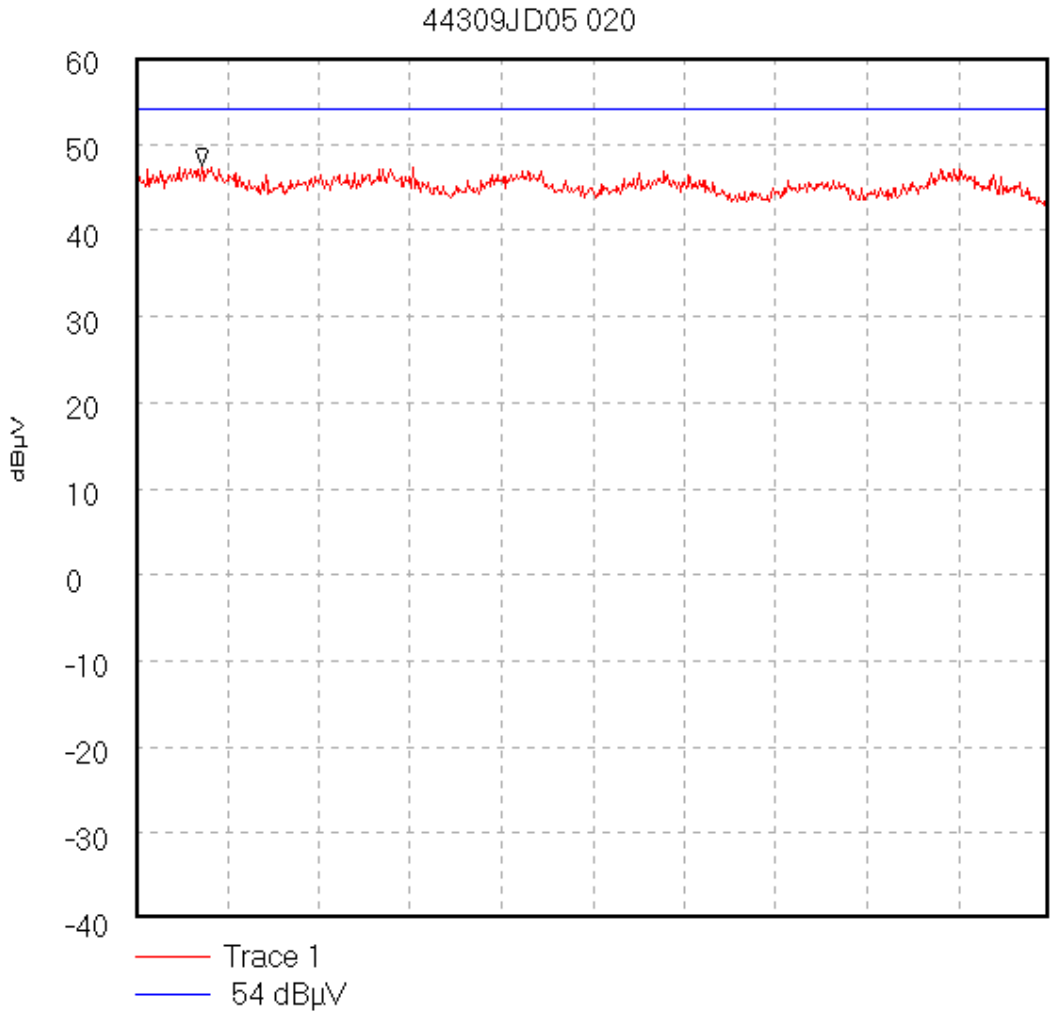
GPH\44309JD05\019
Transmitter Radiated Spurious Emissions
(8.0 GHz to 12.5 GHz)



Start 8.0 GHz; Stop 12.5 GHz
Ref 60 dBµV; Ref Offset 21.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 0 dB; Swp 90.0 mS
Peak 11.0375 GHz, 52.33 dBµV
Display Line: 54 dBµV;
17/12/02 13:55:37

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

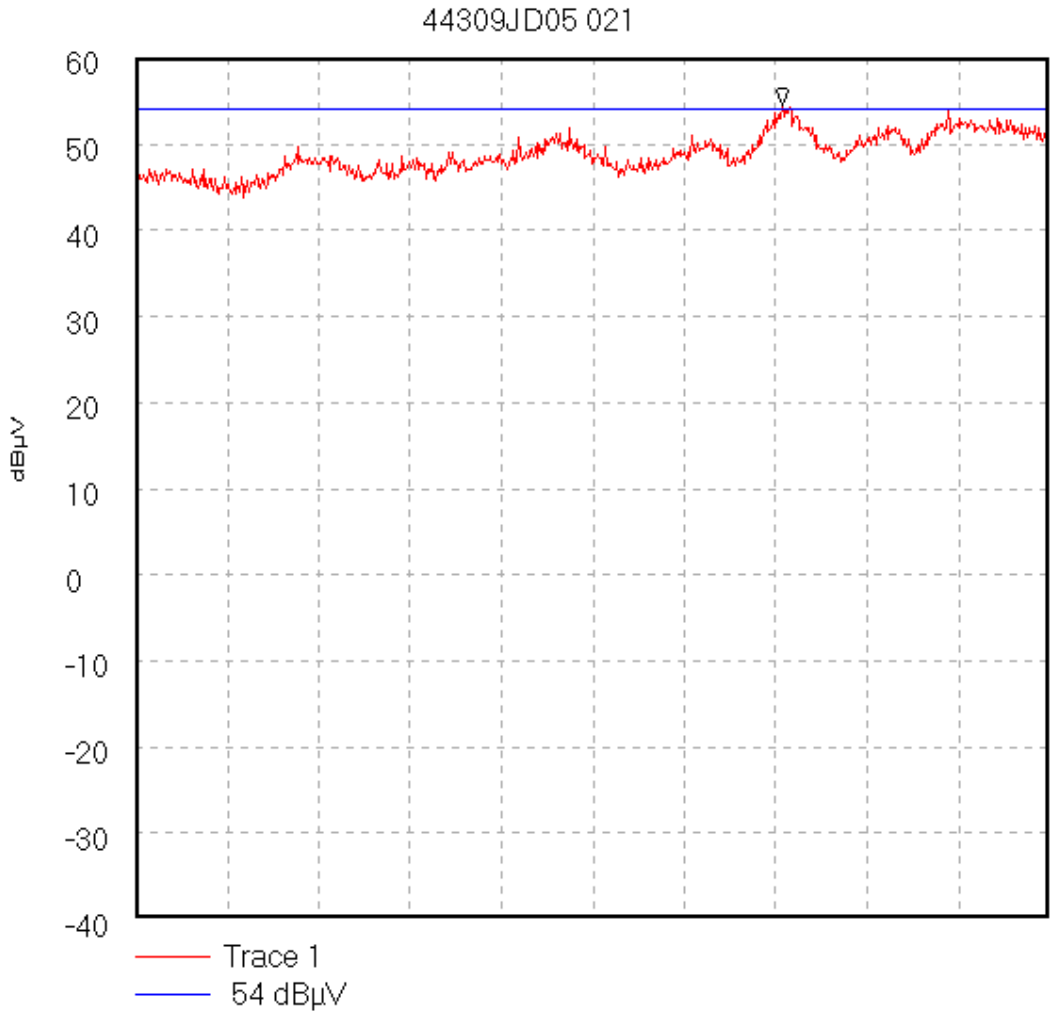
GPH\44309JD05\020
Transmitter Radiated Spurious Emissions
(12.5 GHz to 18.0 GHz)



Start 12.5 GHz; Stop 18.0 GHz
Ref 60 dBµV; Ref Offset 14.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 0 dB; Swp 110.0 mS
Peak 12.894167 GHz, 47.5 dBµV
Display Line: 54 dBµV;
17/12/02 13:59:54

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

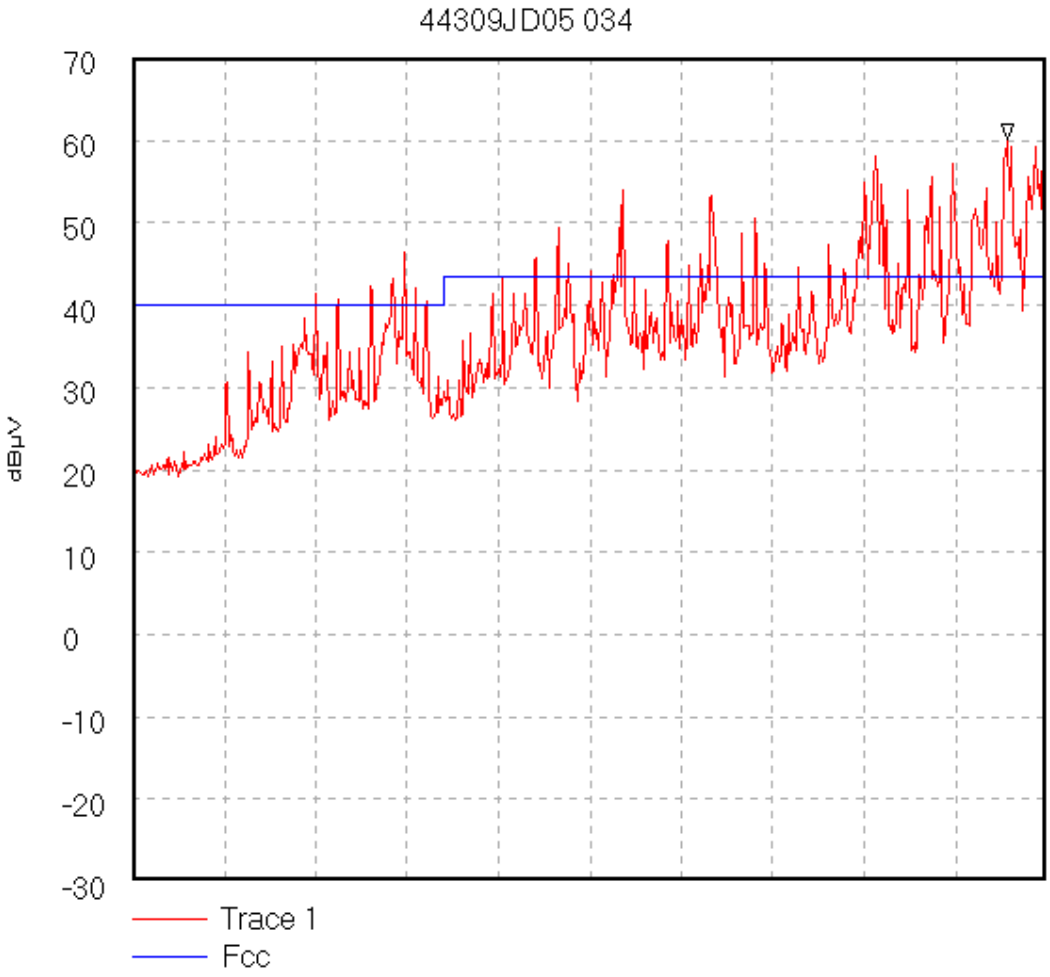
GPH\44309JD05\021
Transmitter Radiated Spurious Emissions
(18.0 GHz to 26.5 GHz)



Start 18.0 GHz; Stop 26.5 GHz
Ref 60 dBµV; Ref Offset 16.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 0 dB; Swp 170.0 mS
Peak 24.006667 GHz, 54.5 dBµV
Display Line: 54 dBµV;
17/12/02 14:02:30

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

GPH\44309JD05\034
Receiver Radiated Spurious Emissions
(30.0 MHz to 200.0 MHz)

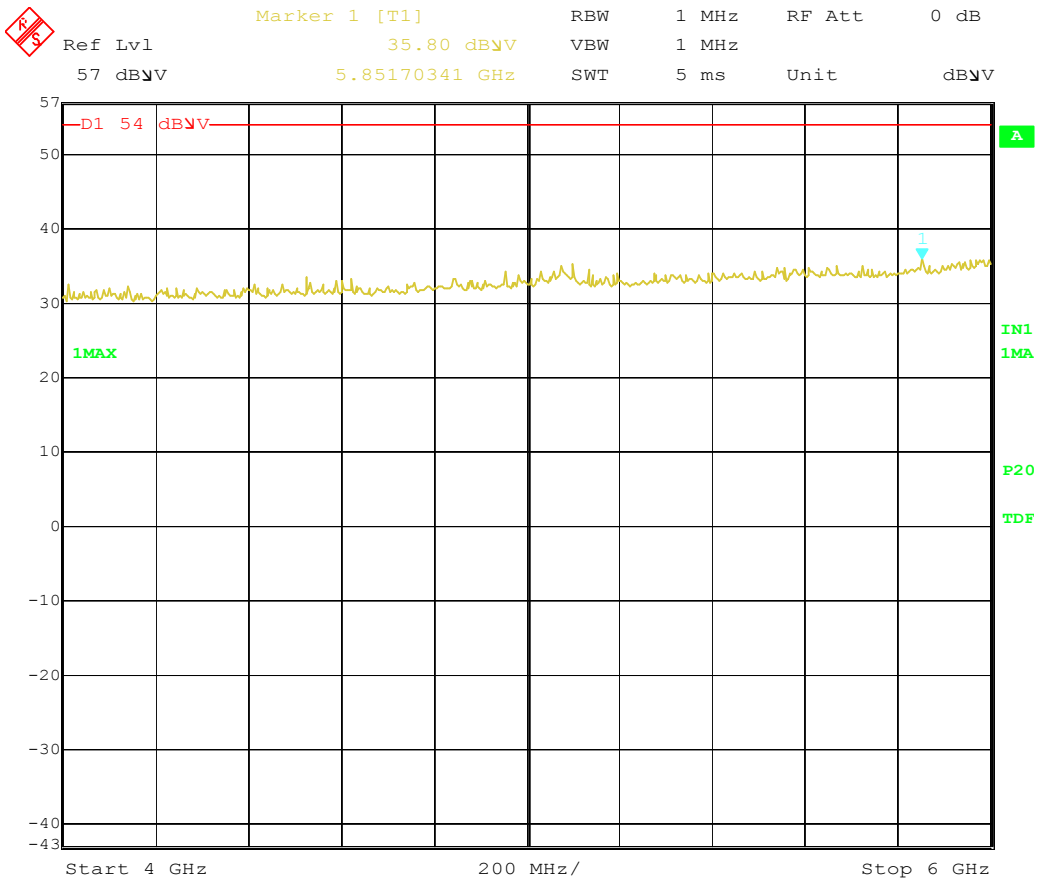


Start 30.0 MHz; Stop 200.0 MHz
Ref 70 dBµV; Ref Offset 0.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 0 dB; Swp 50.0 mS
Peak 192.633333 MHz, 60.0 dBµV
Limit/Mask: Fcc;
Transducer Factors: 25Mto200M
18/12/02 13:52:11

Test Of: Mansella Ltd.
CDP Handset

To: FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247

GPH\44309\RE004
Receiver Radiated Spurious Emissions
(4.0 GHz to 6.0 GHz)

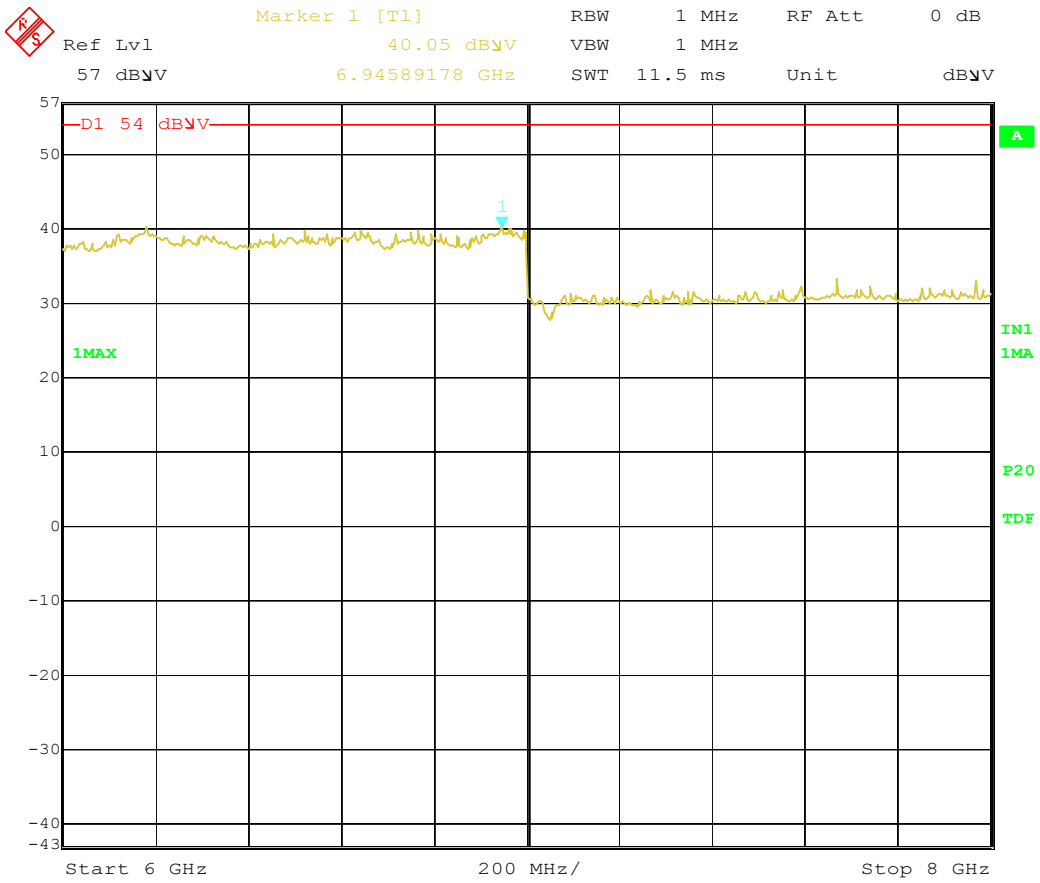


Comment A: Rx Radiated Emissions for Mansella by RFI Ltd.
CDP Hand. GPH/44309/RE004
Date: 12.DEC.2002 15:22:48

Test Of: Mansella Ltd.
CDP Handset

To: FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247

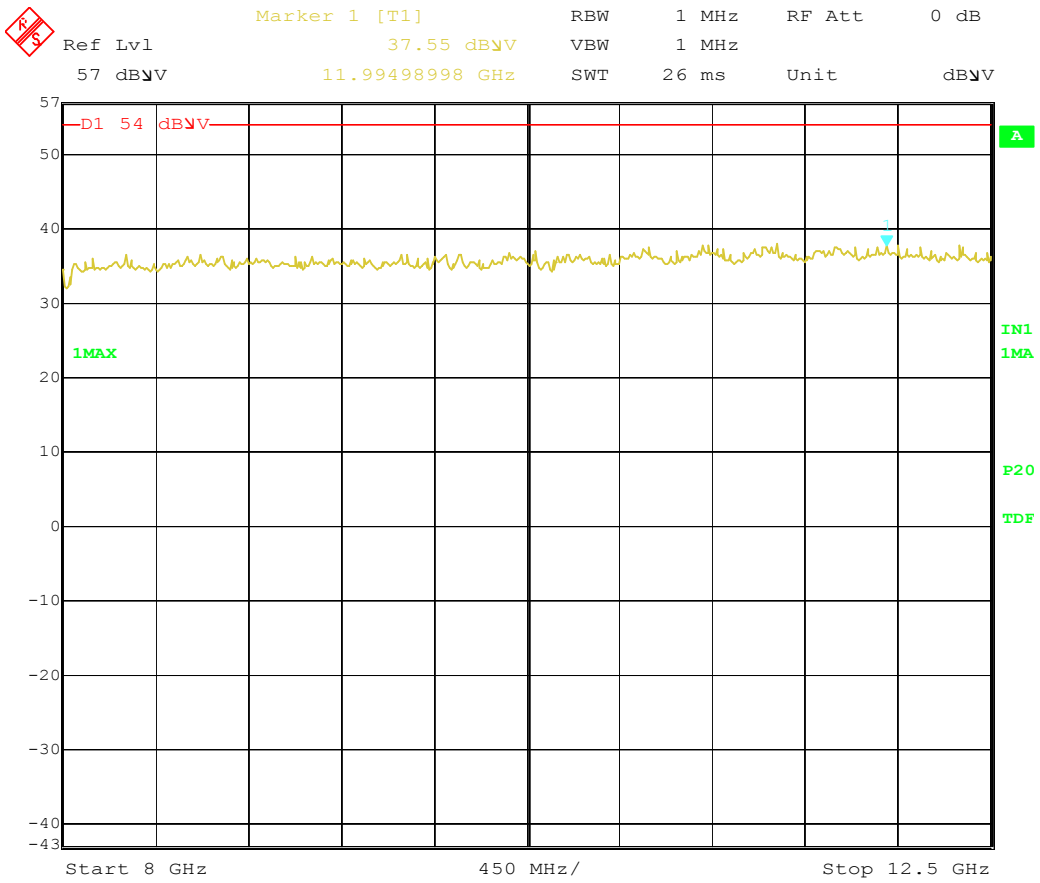
GPH\44309\RE005
Receiver Radiated Spurious Emissions
(6.0 GHz to 8.0 GHz)



Comment A: Rx Radiated Emissions for Mansella by RFI Ltd.
CDP Hand. GPH/44309/RE005
Date: 12.DEC.2002 15:17:17

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

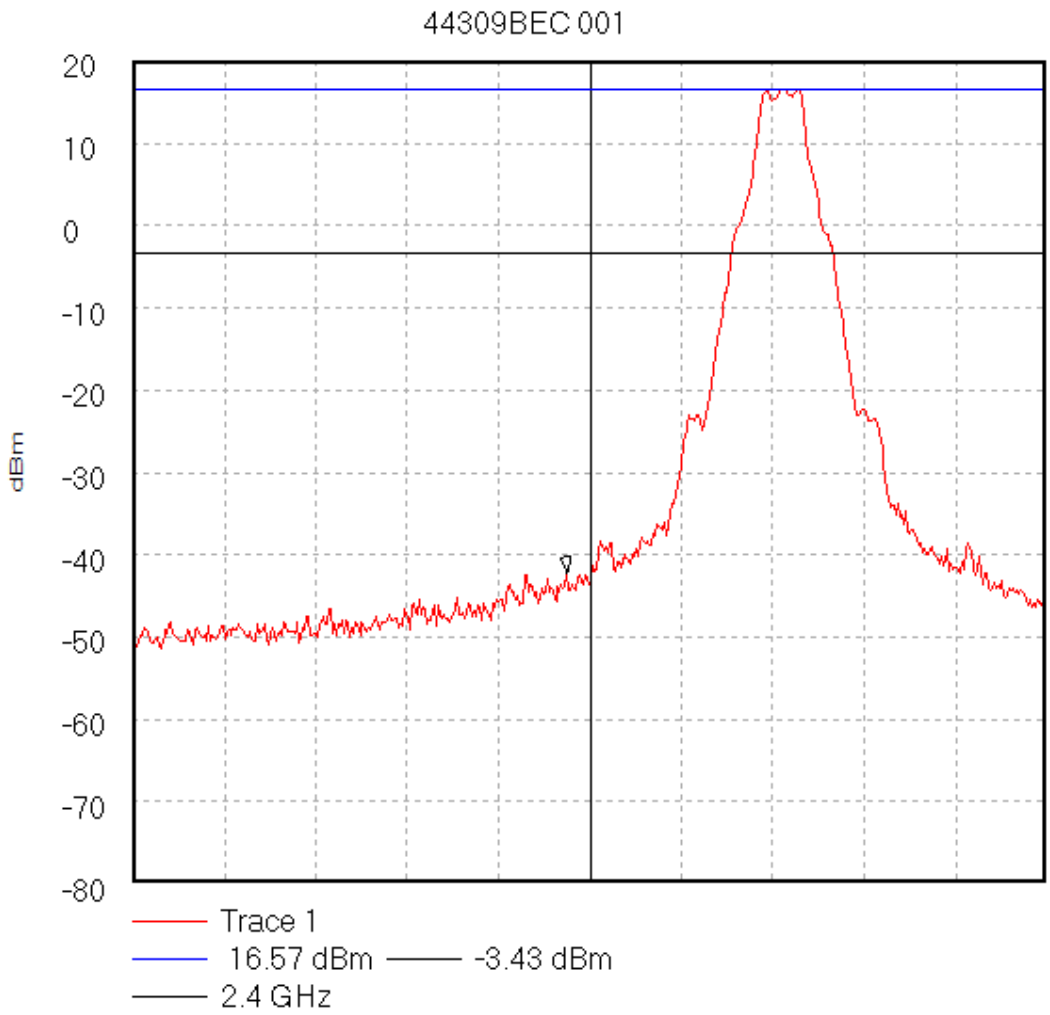
GPH\44309\RE006
Receiver Radiated Spurious Emissions
(8.0 GHz to 12.5 GHz)



Comment A: Rx Radiated Emissions for Mansella by RFI Ltd.
CDP Hand. GPH/44309/RE006
Date: 12.DEC.2002 15:04:39

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

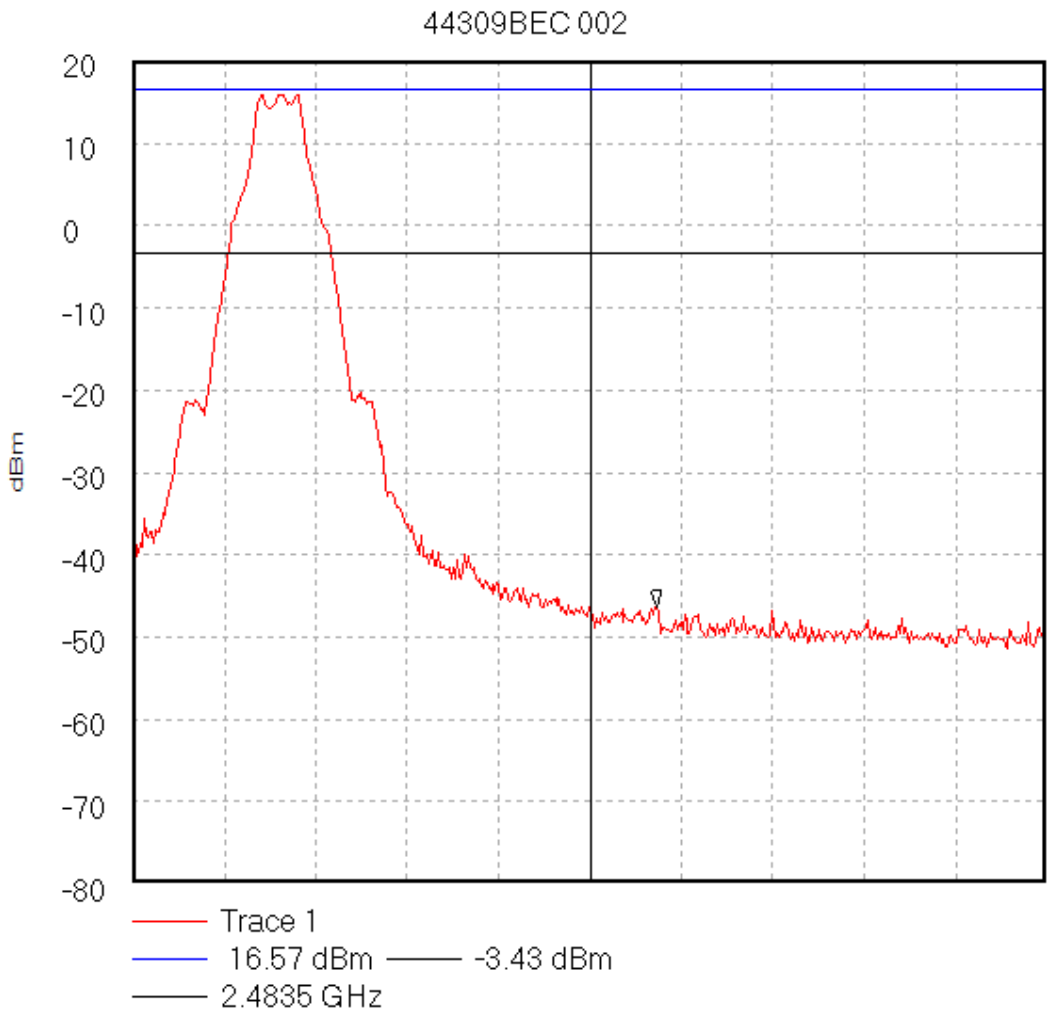
GPH\44309BEC\001
Conducted Emissions Lower Band Edge, Static.



Start 2.395 GHz; Stop 2.405 GHz
Ref 20 dBm; Ref Offset 31.3 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 5.0 mS
Marker 2.399749 GHz, -42.281436 dBm
Display Line: 16.57 dBm; -3.43 dBm;
11/02/2003 16:04:33

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

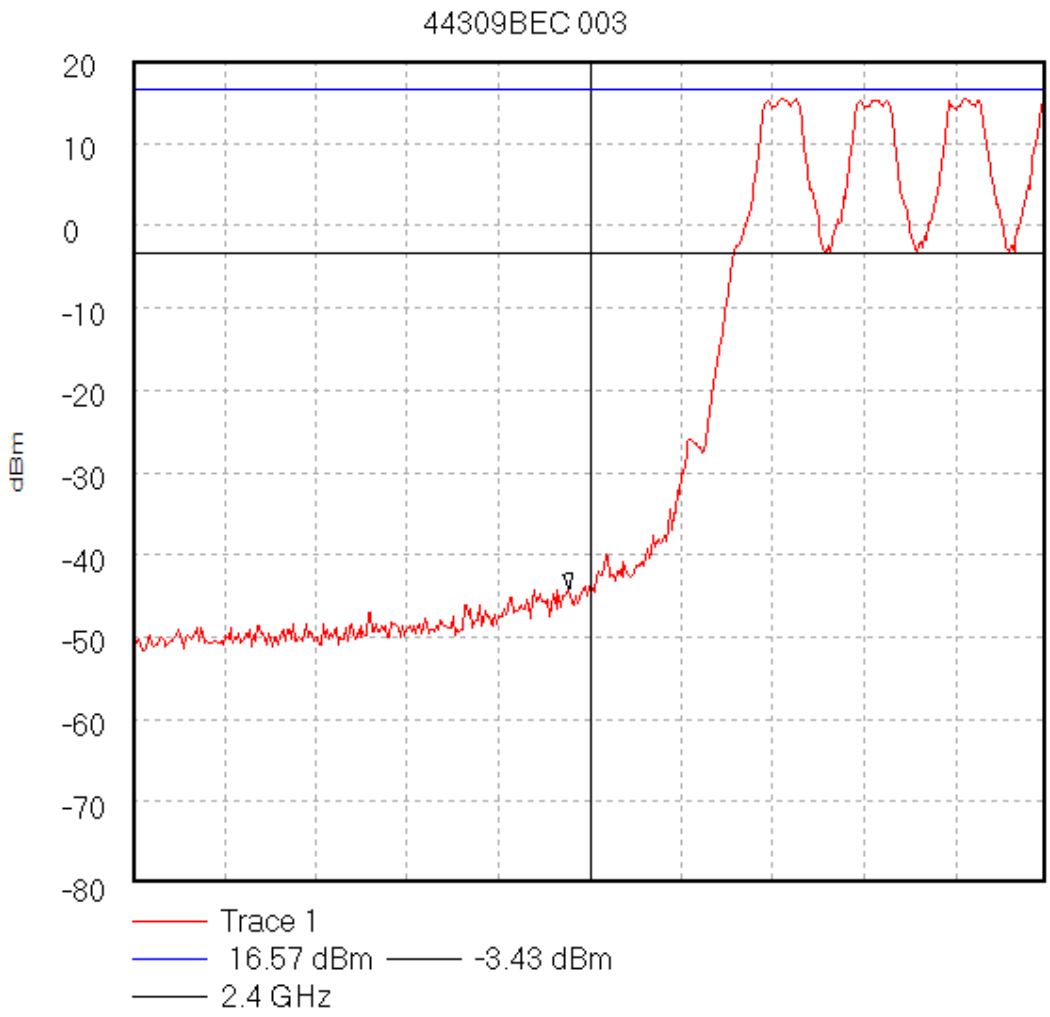
GPH\44309BEC\002
Conducted Emissions Upper Band Edge, Static.



Start 2.4785 GHz; Stop 2.4885 GHz
Ref 20 dBm; Ref Offset 31.3 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 5.0 mS
Marker 2.484231 GHz, -46.353 dBm
Display Line: 16.57 dBm; -3.43 dBm;
11/02/2003 16:09:48

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

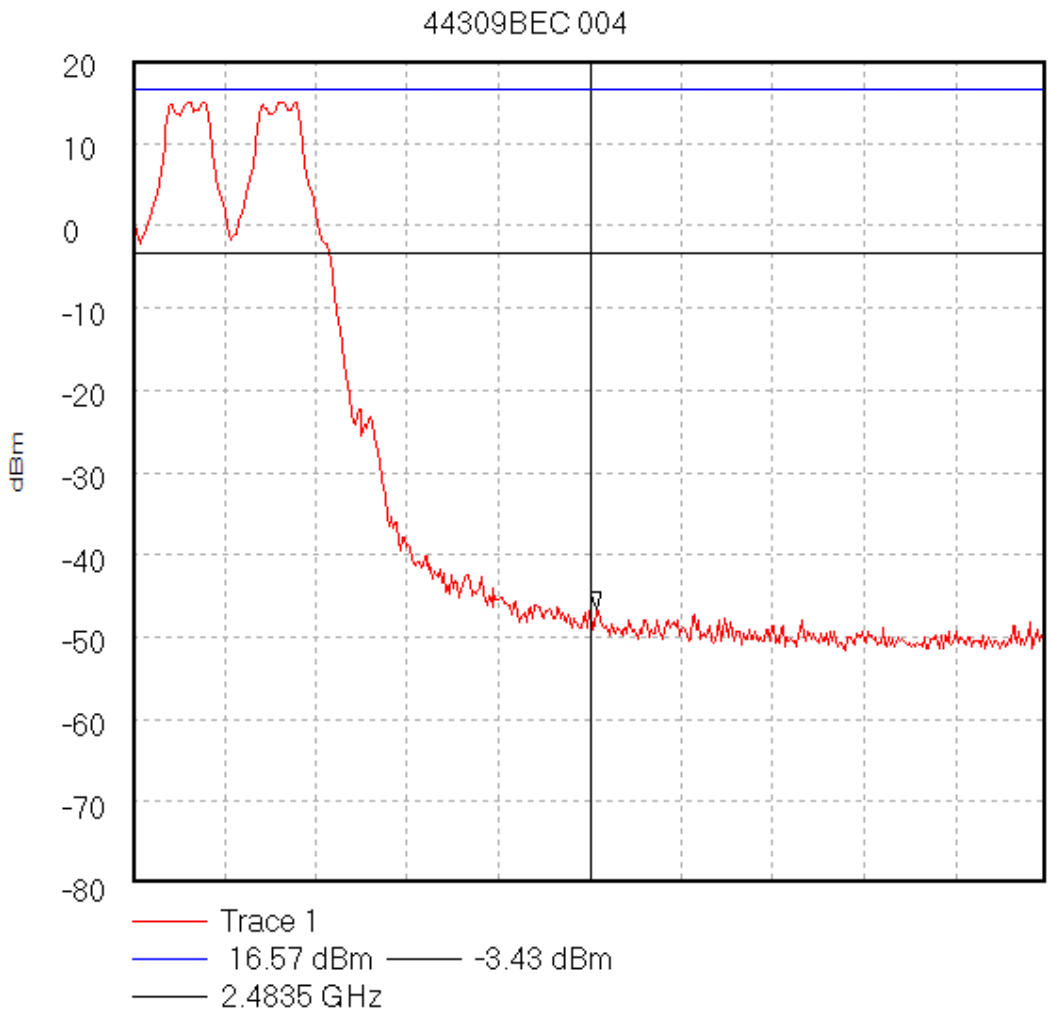
GPH\44309BEC\003
Conducted Emissions Lower Band Edge, Hopping all Channels.



Start 2.395 GHz; Stop 2.405 GHz
Ref 20 dBm; Ref Offset 31.3 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 5.0 mS
Marker 2.39977 GHz, -44.211459 dBm
Display Line: 16.57 dBm; -3.43 dBm;
11/02/2003 16:13:45

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

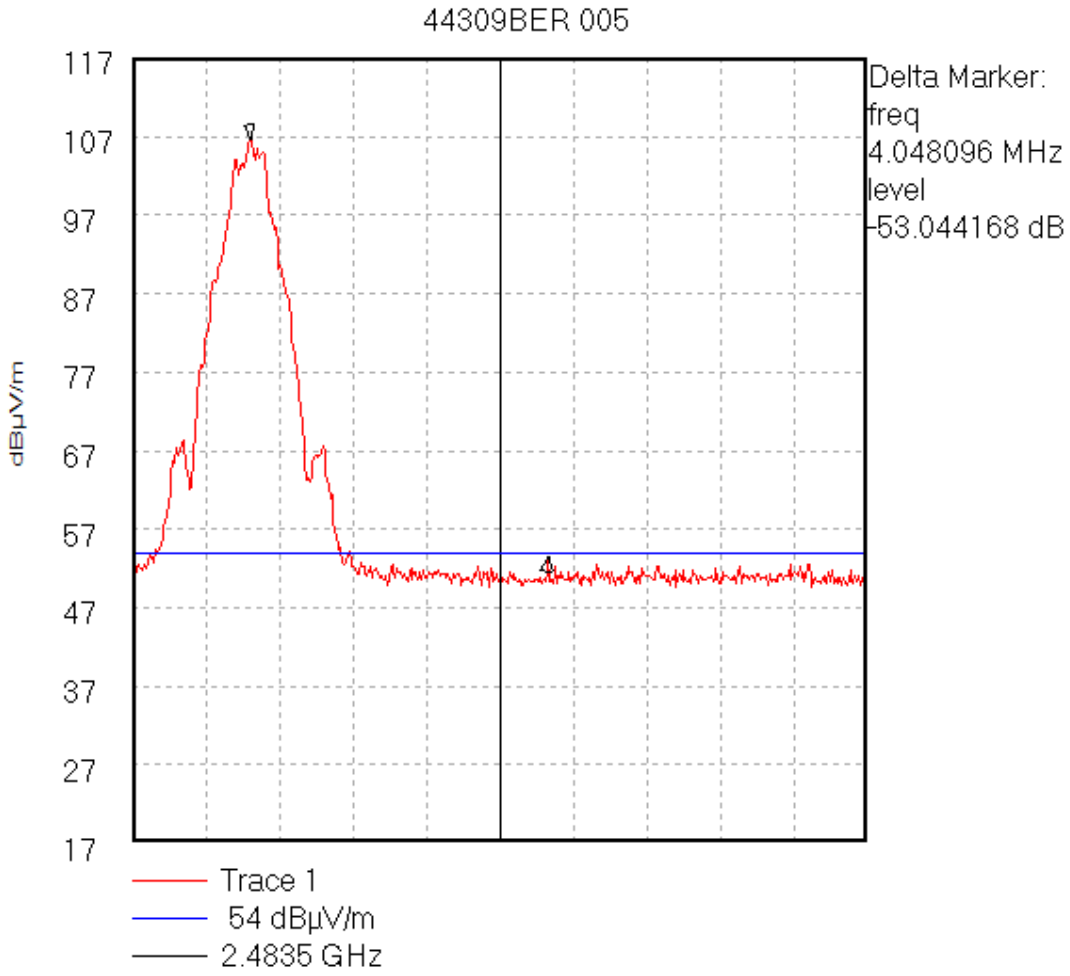
GPH\44309BEC\004
Conducted Emissions Upper Band Edge, Hopping all Channels.



Start 2.4785 GHz; Stop 2.4885 GHz
Ref 20 dBm; Ref Offset 31.3 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 5.0 mS
Marker 2.48357 GHz, -46.619418 dBm
Display Line: 16.57 dBm; -3.43 dBm;
11/02/2003 16:16:43

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

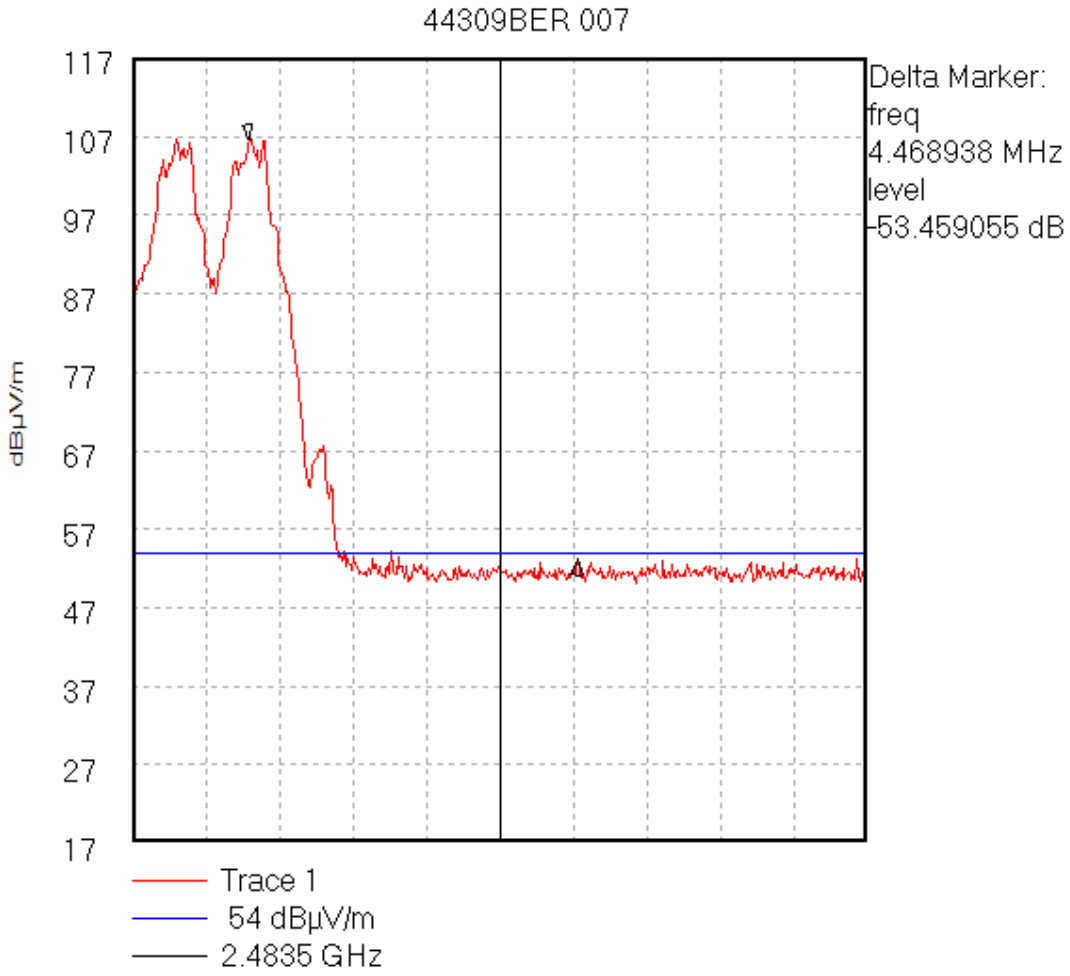
GPH\44309BER\005
Radiated Emissions Upper Band Edge, Static.



Start 2.4785 GHz; Stop 2.4885 GHz
Ref 117 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 50.0 kHz; VBW 50.0 kHz; Att 20 dB; Swp 10.0 mS
Marker 2.480103 GHz, 106.594767 dBµV/m
Delta 2.484151 GHz, 53.550598 dBµV/m
Display Line: 54 dBµV/m;
12/02/2003 09:14:45

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

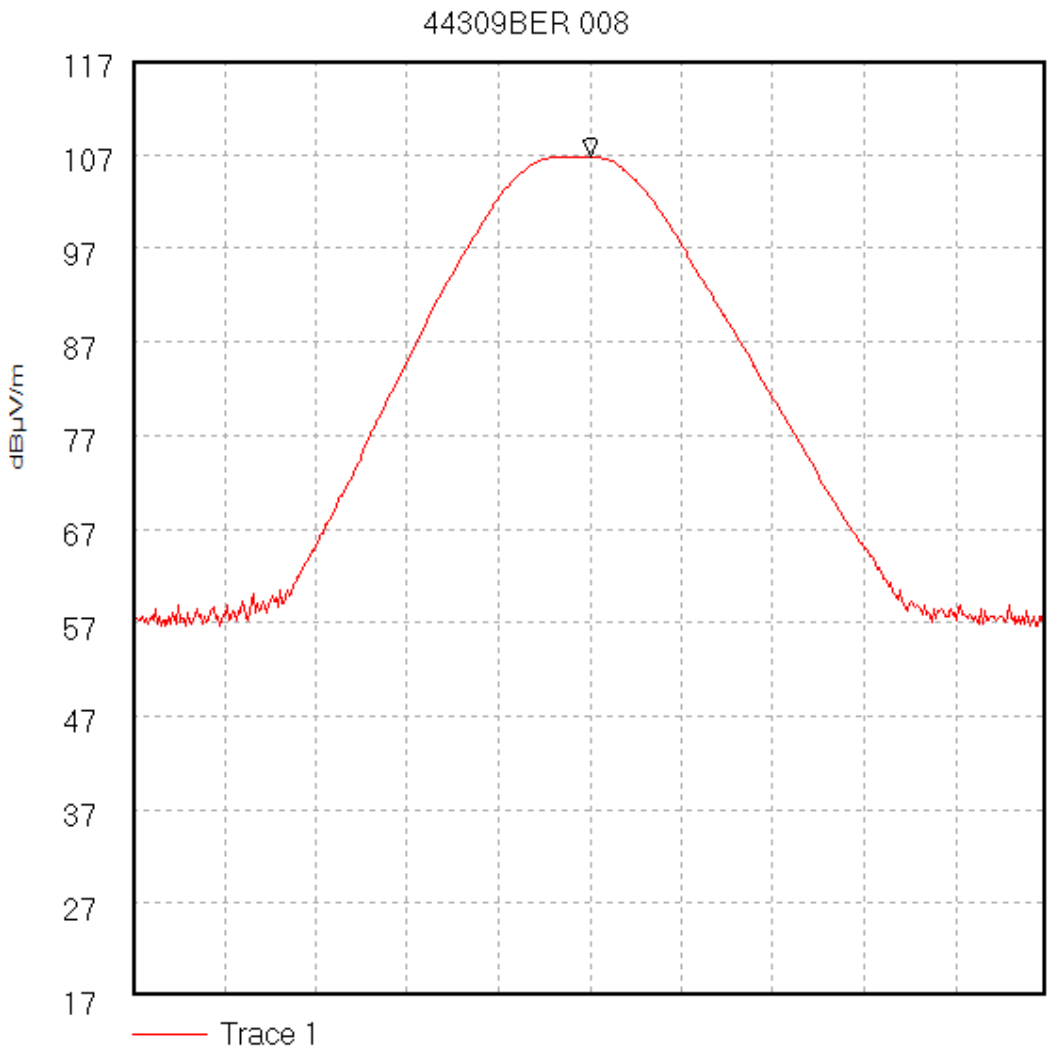
GPH\44309BER\007
Radiated Emissions Upper Band Edge, Hopping all Channels.



Start 2.4785 GHz; Stop 2.4885 GHz
Ref 117 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 50.0 kHz; VBW 50.0 kHz; Att 20 dB; Swp 10.0 mS
Marker 2.480083 GHz, 106.598833 dBµV/m
Delta 2.484552 GHz, 53.139778 dBµV/m
Display Line: 54 dBµV/m;
12/02/2003 09:27:10

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

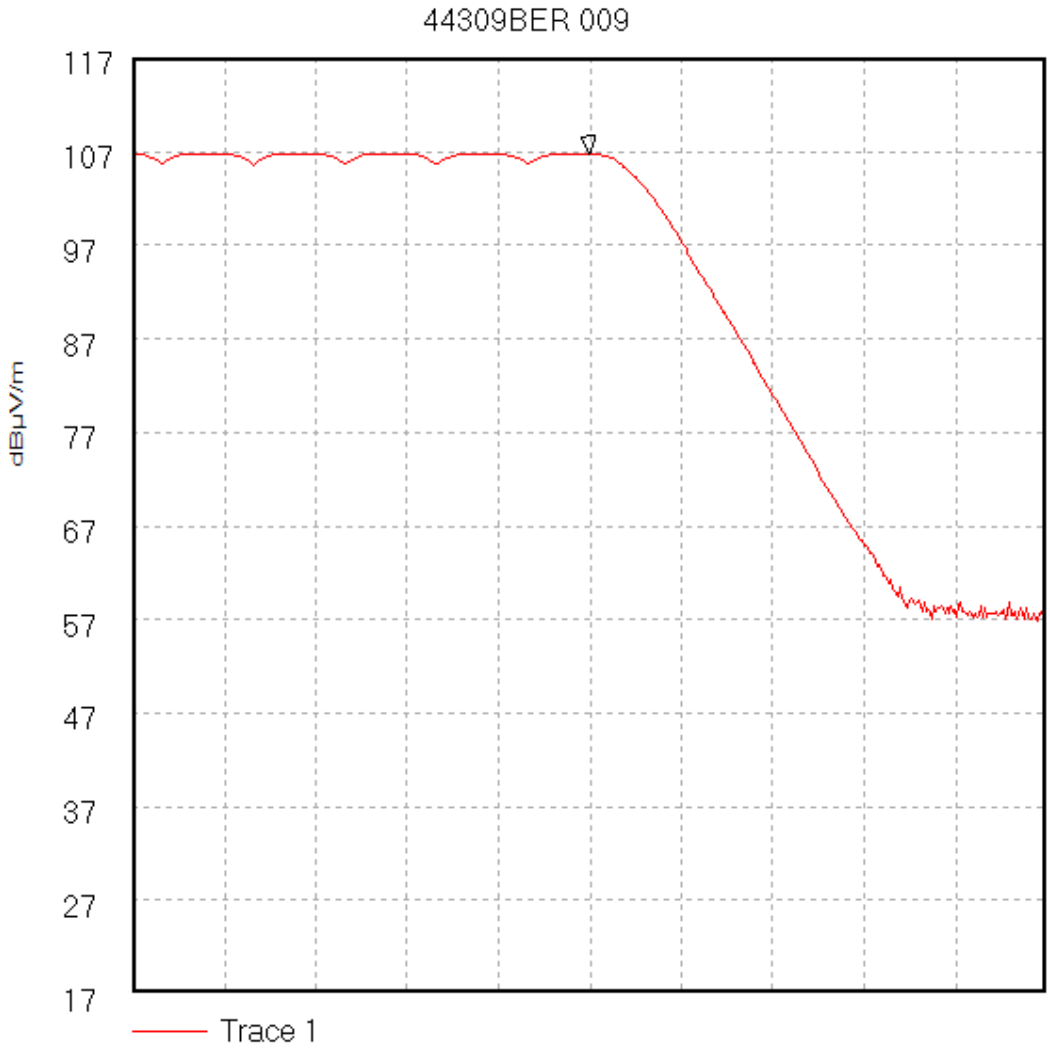
GPH\44309BER\008
Radiated Emissions Upper Band Edge, Static.



Start 2.475254 GHz; Stop 2.485254 GHz
Ref 117 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 20 dB; Swp 5.0 mS
Peak 2.480264 GHz, 106.765604 dBµV/m
12/02/2003 09:30:52

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

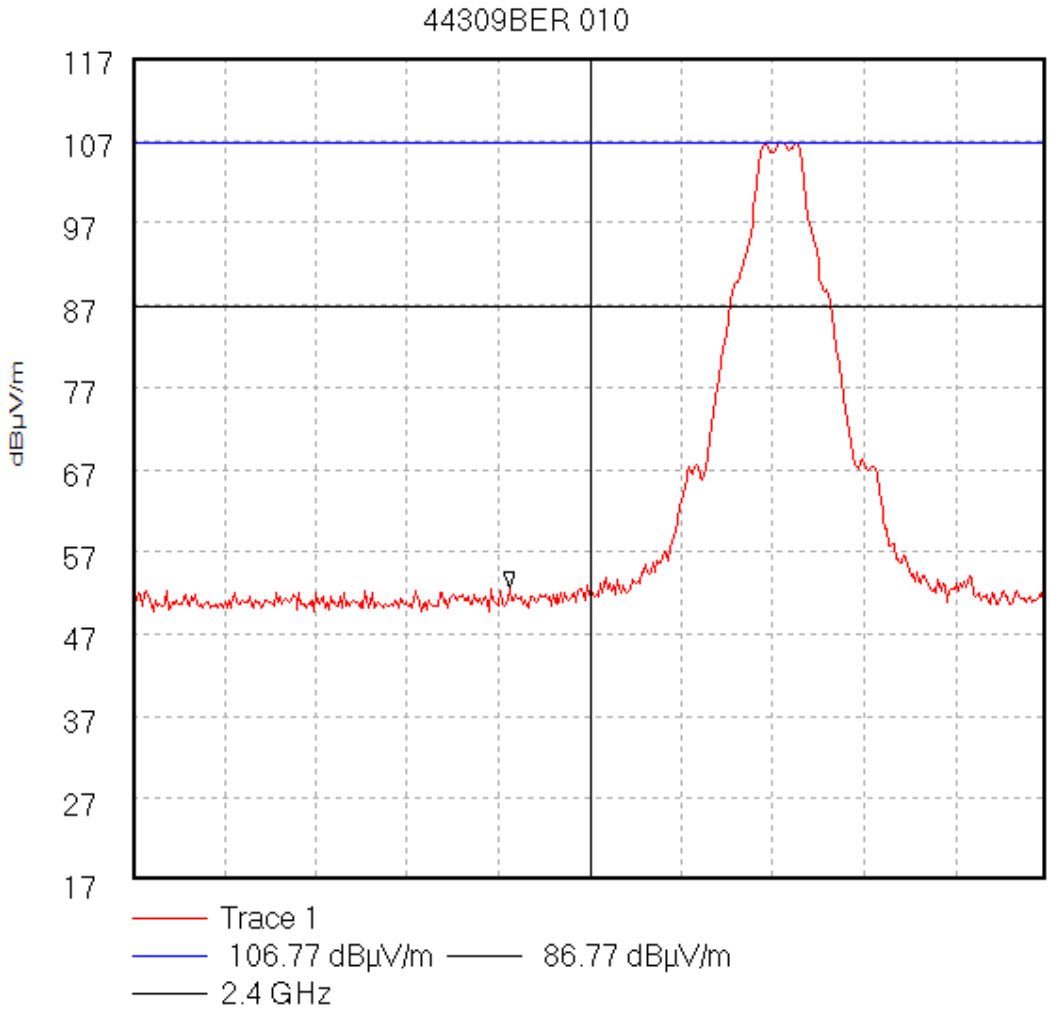
GPH\44309BER\009
Radiated Emissions Upper Band Edge, Hopping all Channels.



Start 2.475254 GHz; Stop 2.485254 GHz
Ref 117 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 20 dB; Swp 5.0 mS
Marker 2.480254 GHz, 106.745264 dBµV/m
12/02/2003 09:31:52

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

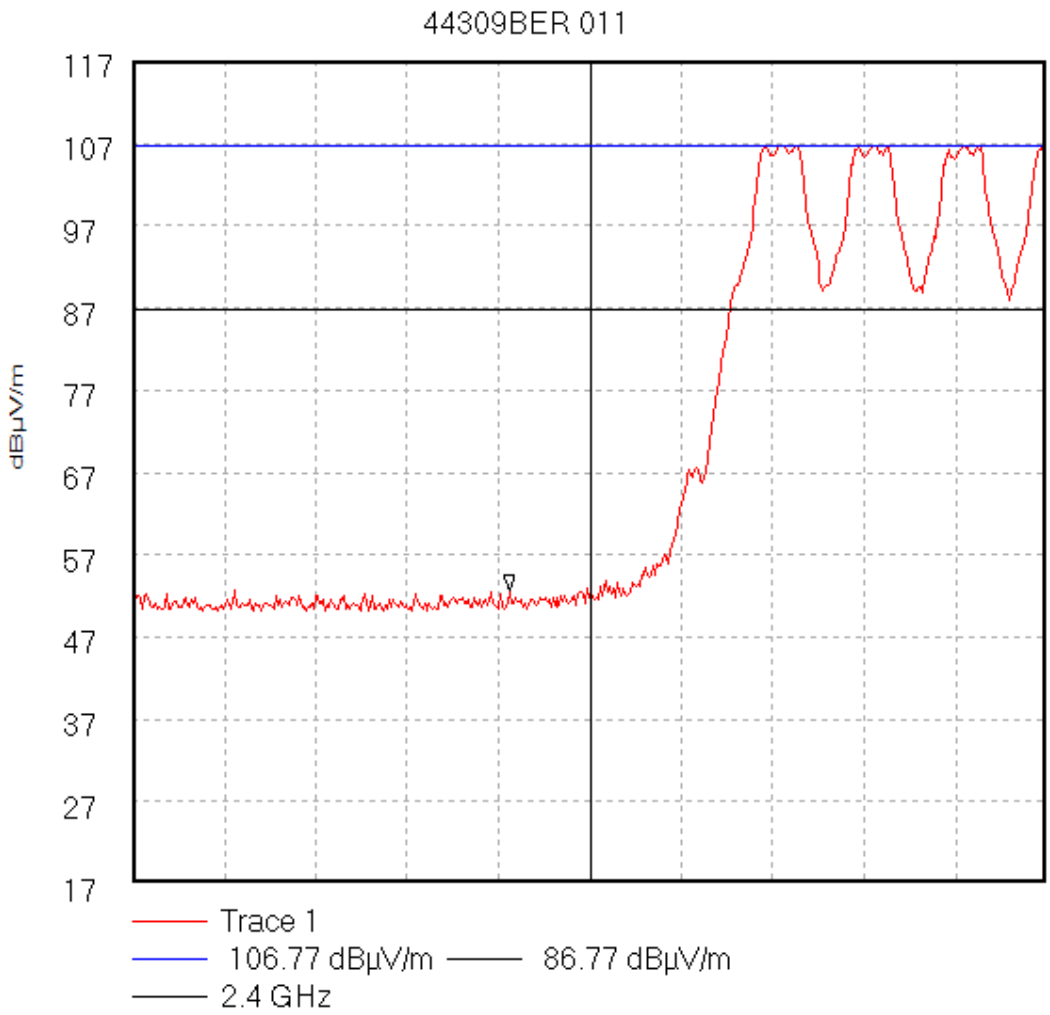
GPH\44309BER\010
Radiated Emissions Lower Band Edge, Static.



Start 2.395 GHz; Stop 2.405 GHz
Ref 117 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 20 dB; Swp 5.0 mS
Marker 2.399128 GHz, 52.574402 dBµV/m
Display Line: 106.77 dBµV/m; 86.77 dBµV/m;
12/02/2003 09:37:59

Test Of: **Mansella Ltd.**
CDP Handset
To: **FCC Part 15 Subpart C: 2001 (Intentional Radiators) Section 15.247**

GPH\44309BER\011
Radiated Emissions Lower Band Edge, Hopping all Channels.



Start 2.395 GHz; Stop 2.405 GHz
Ref 117 dBµV/m; Ref Offset 0.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 20 dB; Swp 5.0 mS
Marker 2.399128 GHz, 52.574402 dBµV/m
Display Line: 106.77 dBµV/m; 86.77 dBµV/m;
12/02/2003 09:40:04

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